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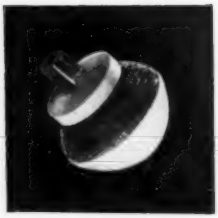

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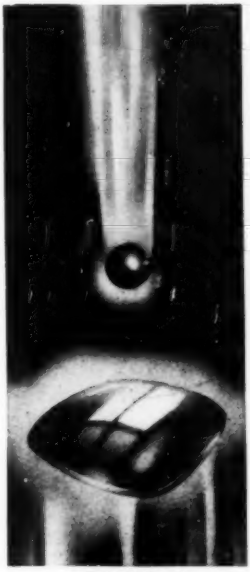

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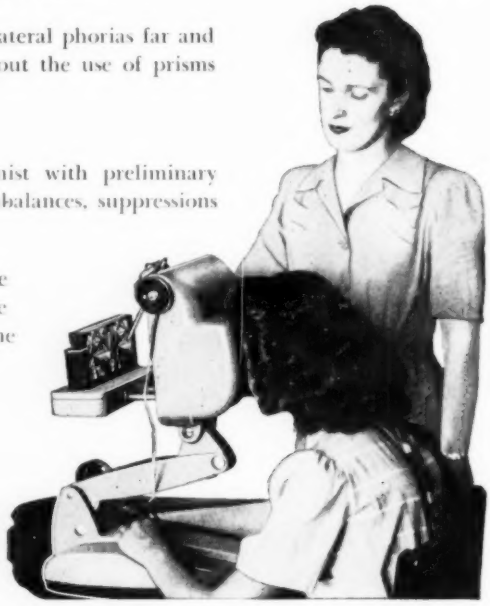

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FOREWORD

THE objective of the Quarterly Review of Ophthalmology is to bring together in one publication concise but authoritative abstracts of current articles on ophthalmology, according to an all inclusive plan which will include all special, state, and national journals as well as the bulletins of clinics, hospitals, etc., and the transactions of meetings. This will embrace both the domestic and foreign literature.

To assist the reader to locate quickly the articles of current interest all data will be classified and published according to the following systematic plan:

1. Recent Advances in Ophthalmology
2. Recent Advances in Medicine, Surgery and the Sciences of Interest to Ophthalmologists
3. Anatomy, Embryology, Heredity, Development and Nutrition
4. Optics, Physiology and Psychology of Vision
5. Physiology, Chemistry and Biochemistry of the Eye
6. Pathology, Bacteriology and Immunology
7. Diagnostic Methods of Examination Biomicroscopy and Photography
8. Ocular Movements and Motor Anomalies, Nystagmus, Reading Disability
9. Anomalies of Refraction and Accommodation, Contact Lenses
10. Conjunctiva
11. Cornea, Sclera and Tenon's Capsule
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13. Uveal Tract and Sympathetic Ophthalmitis
14. Crystalline Lens
15. Vitreous Humor
16. Retina
    a. Color Vision
    b. Light Sense (Night Vision)
17. Neuro-Ophthalmology, Optic Nerve Visual Pathways, Centers and Visual Fields
18. Eyeballs, Exophthalmos and Enophthalmos
19. Glaucoma and Hypotony
20. Lacrimal Apparatus
21. Eyelids
22. Orbit
23. Allergy
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25. Aviation and Military Ophthalmology
26. Medical Ophthalmology
27. Medicine, Surgery and the Sciences
28. Pharmacology, Toxicology and Therapeutics
29. Comparative Ophthalmology
30. Tropical Ophthalmology
31. Hygiene, Prophylaxis, Occupational Ophthalmology and Injuries
32. Illumination and Illuminating Engineering
33. Ophthalmic Sociology
34. Education, History and Institutions
35. Miscellaneous
36. Book Reviews
37. Announcements

In each section there will be published a series of annotated references under the heading, "References to Current Articles." To save the reader's time and also to assist in the compilation of bibliographies these references will invariably refer to articles of an academic nature or those making similar reports to abstracts recently published on the same subject. A cumulative index in the concluding numbers of each volume will provide further aid in locating specific references. Constructive criticism will be appreciated.

CONRAD BERENS, M.D.

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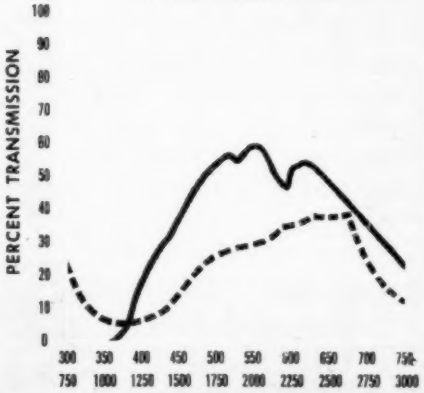

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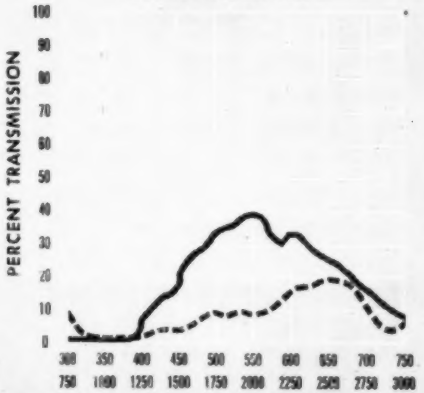

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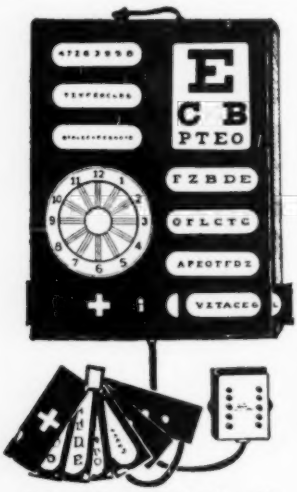

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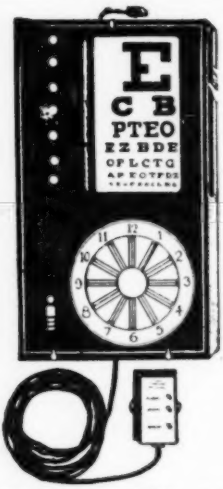

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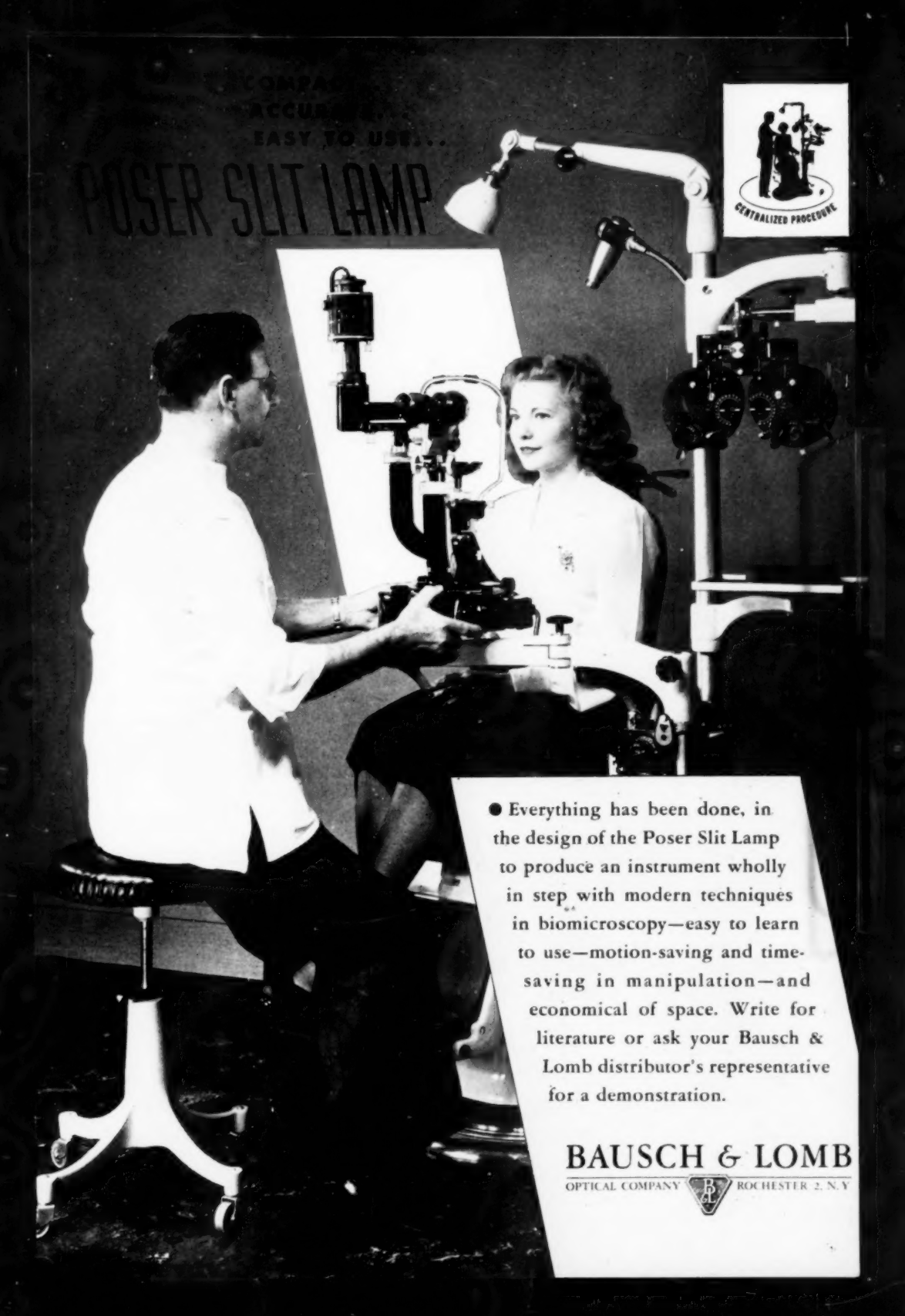
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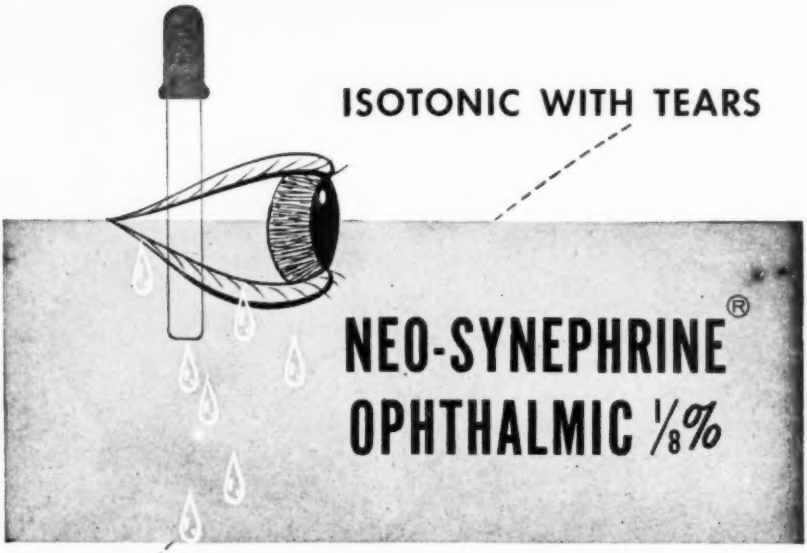

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QUARTERLY REVIEW

of

OPHTHALMOLOGY AND ALLIED SCIENCES

Volume 5 Number 2

June 1949

1. Recent Advances in Ophthalmology

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2. Recent Advances in Medicine, Surgery and the Sciences of Interest to Ophthalmologists

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3. Anatomy, Embryology, Heredity, Development and Nutrition

Iris Numerata. *T. A. Vos, Hague, Holland.* Ophthalmologica Basel 115:354-58, June 1948.

In some individuals the crypts of the iris form a definite cipher-like pattern (Iris numerata). This phenomenon was observed in a healthy 13 year old boy with perfectly normal eyes. His anamnesis revealed nothing to account for this peculiarity. Examination with the slit lamp showed some lacunae, in the 9 o'clock position (right iris, ciliary area), arranged in the cipher 2 pattern clearly visible with the naked eye. The crypts in this area were small and spaced somewhat apart from one another, which partly accounted for the lacuna formation. Another factor was the rarified state of the superficial stroma covered by a layer of endothelium. A small blood vessel was seen under the lacunae running in a radial direction. Maximal miosis with 4 per cent pilocarpine eliminated the base of the cipher 2 and the pattern was transformed into the cipher 7. In this case the condition did not seem to be inherited. The hereditary nature of this phenomenon is indicated in the case reported by van Duyse: a father and daughter both had Iris numerata. The former showed the cipher 45 in the right and the cipher 10 in the left iris. The latter had 10 in her right and the cipher 10 in the left iris. The latter had 10 in her right and 20 in her left eye (beneath the pupils). In both cases the ciliary area was involved but the meridians were not mentioned in the report.

4. Optics, Physiology and Psychology of Vision

Educational Psychology as Applied to Vision Training. *Daniel Woolf, Optometry Laboratory, Columbia University, New York, N. Y.* Am. J. Optometr. 25:561-78, December 1948.

The purpose of vision training—including orthoptic training—is: (1) the development of and (2) the retention of higher performance levels in certain visual skills together with (3) the transfer of the gain to the normal existence. With a view to better patient management a survey of pertinent psychologic literature is made. Learning is found to be aided by (a) insight into the learning situation; (b) good motivation as provided by enjoyment of the work, desire for the goal or competition; (c) spaced learning periods. Plateaus of learning are held to be due to; (a) simpler processes becoming automatic; (b) loss of interest; (c) arrival at a more difficult stage of the learning process. Retention is said to be roughly proportional to over-learning. Transfer is held to be an individual problem requiring further study. The patient should be worked slightly below a level which produces anxiety or a sense of frustration. This tendency can be reduced by keeping the training situation simple, familiar and concrete rather than complex, strange or abstract. On this basis some rather arbitrary rules are laid down for training room procedure and patient management. 34 references. 11 figures.—*Author's abstract.*

A Mechanism for Optic Nerve Conduction and Form Perception: II. *James T. Culbertson, University of Chicago, Chicago, Ill.* Bull. Math. Biophysics 10:97-102, June 1948.

This paper presupposes knowledge of a previous paper on this subject Analysis of a hypothetic device for bottleneck optic nerve conduction and form perception is continued. The neural mechanism described provides for a form perception invariant for transformations of size, translation and rotation on the retina. To some extent, it seems a question of how far it is desired to alter the shape, size, position and orientation of each image and yet obtain an invariant response, and to what and how many forms this mechanism is expected to respond invariantly. The number of neurons and the number of dendrites and axons per neuron are limited but desired results can be obtained within obvious limitations. Neuron economy versus dendrite, axon and geometric economy are discussed. In order to simplify the study, no limit is placed on the number of dendrites and axons a neuron may have, nor on greatest distances between dendrite or axon endings of the same nerve cell. Economizing in this nerve net to a maximum of about 200 dendrites and axons and to reasonable limits on distances involved, resulting alterations involve an increased number of neurons in the net but there are no other important changes. This economy still permits a neuron economy

giving a reasonable number of nerve cells. The economy analysis, classification of patterns into forms and construction of the attention apparatus to reduce reaction time of the mechanism will be discussed in a subsequent paper. 1 reference. 2 figures.

The Ego and the Eye. *T. A. Watters, New Orleans, La.* North Carolina M. J. 9: 323-28, July 1948.

The relation of the ego to the eye is so close that they mutually affect one another. This is true because the ego uses the eye for orientation and assimilation of experience; and through the eye, the ego's desires and thoughts are translated to others. Thus the ego prizes sight above all other senses. When the eye is deranged the ego becomes confused. The eye is bound to the ego by emotions which enter into all their mutual activities; the emotions dictate the quality of the eye's performance and render to the beholder the meaning it conveys. We are thus able to read the language of the eye. The combination of ego and eye needs the muscular system, and thus the mechanism for looking and seeing transcends a single eye.

In evolution, sight developed while smell was repressed. In the development of its functional capacity the eye paved the way for the higher integrations of thinking and knowing which served the conscious ego of modern man.

The eyes cannot be torn apart from the ego and studied separately, regardless of the presenting disorder, since the combination works as a unit. Patients with disturbances in the looking-seeing mechanism warrant a careful study by the ophthalmologist for psychogenic factors; the psychiatrist to whom the patients are referred should appreciate the intricacies of this mechanism when it is employed in the service or disservice of the ego. In this mechanism the psychiatrist finds signals which he may follow, for the eyes not only portray diagnostically but they also fortell the ego's struggle against distress and disorder. 14 case histories are presented. 2 references.

5. Physiology, Chemistry and Biochemistry of the Eye

Chemistry of Visual Processes. *M. H. Pirenne, University College, London, England.* Nature 161:724, May 8, 1948.

The shape of the spectral absorption curve of visual purple varies—for purely optical reasons—with the optical density of the absorbing layer. From a knowledge of the shape of the spectral sensitivity curve of rod elements, the optical density of visual purple in situ can therefore be derived. Such a method has been used in the case of the living human eye. It's

application is suggested in the case of single optic fiber preparations in animal eyes, in which case uncertainties due to selective absorption by the eye media are avoided. Knowing the above density, the absolute number of quanta absorbed by the rods of the preparation under conditions could be immediately calculated. 5 references.—*Author's abstract.*

The Synthesis from Vitamin A_1 of "Retinene$_1$" and of a New 545 mu Chromogen Yielding Light-Sensitive Products. *George Wald, Harvard University, Cambridge, Mass.* J. Gen. Physiol. 31:489-504, July 20, 1948.

The carotenoid retinene$_1$ is liberated by the bleaching of rhodopsin in the retina and afterwards converted to vitamin A_1. Ball, Goodwin and Morton found that a petroleum ether solution of vitamin A_1 left standing in the cold over solid manganese dioxide for three or four days was largely transformed into a substance spectroscopically similar to retinene$_1$ and believed to be vitamin A_1-aldehyde. The synthetic product is closely related to or identical with retinene$_1$ and is referred to as "retinene$_1$", the quotation marks indicating any remaining reservations concerning its identity with the natural product. The author confirmed this observation and also found the powerful adsorption of vitamin A_1 by manganese dioxide to be an important factor in the process. The procedure was repeated as a chromatogenic oxidation. In this experiment, manganese dioxide was packed in a column, vitamin A_1 solution poured in on top and the product drawn off in the filtrate. The product is either "retinene$_1$" or a new substance, the 545 mu chromogen. This is an example of a potentially important chromatographic reaction. This 545 mu chromogen is not fluorescent and has maximal absorption at 380 and 290 mu in chloroform; at 376 and 290 mu in ethanol; and at 361 and 277 mu in hexane. It is mildly basic, sulfuric or hydrochloric acid extracting it from hexane to form orange-red products. It is strongly absorbed on calcium carbonate and markedly hypophasic in partition between petroleum ether and aqueous methanol. Certain spectral peculiarities indicate that the 545 mu chromogen contains a carbonyl group, while other properties indicate hydroxyl groups. The substance is therefore apparently a hydroxyl-carbonyl vitamin A_1 derivative. The 545 mu chromogen forms red products with antimony chloride or sulfuric or hydrochloric acids which are all markedly sensitive to light. They seem to be closely related generically to the prosthetic groups of the visual photopigments. 19 references. 2 tables. 6 figures.

(The chief point of this research paper is the oxidative degradation of vitamin A_1 to retinene$_1$. Presumably a similar activity process occurs in vivo to form retinene$_1$ in the body. The formation of indicator yellow is still as obscure as ever according to the author in the original article.—A. C. K.)

6. Pathology, Bacteriology and Immunology

Pathology of Mucous and Salivary Gland Tumors in the Lacrimal Gland and the Relation to Extra-Orbital Mucous and Salivary Gland Tumors. *Eric Godtfredsen, Copenhagen, Denmark.* Brit. J. Ophth. 32:171-79, March 1948.

Two cases of mixed lacrimal gland tumors are presented. Histopathologically these are: 5 cases of fibro-myxo-epitheliomas (1 malignant); 4 basaliomas of which 3 were cylindromas and all malignant; 1 was either a basilioma or sarcoma of low differentiation. The incidence of histopathologic malignancy, 60 per cent, does not agree with the biologic malignancy because from the biologic viewpoint nearly all are malignant. Recurrence despite histologic benignity occurred in 2 cases.

The prognosis of lacrimal gland tumors is similar to the large salivary gland tumors due in some measure to the parallelism in anatomic structures. The prognosis is worse (25 per cent five-year cures) than in tumors arising from glandular elements of the mucous membranes of the nose and paranasal sinuses (50 per cent five-year cures).

Histologically, lacrimal gland tumors resemble mucous and salivary glands in other regions. Malignancy should be ascertained by biopsy. The principles of treatment consist of excision for benign tumors either by Kroenlein's operation or anterior orbitotomy. Malignant tumors should receive preoperation roentgenotherapy (4 to 5,000 r) followed in one month by orbital evisceration. 16 references. 1 table. 2 figures—*R. T. Snip.*

The Prognosis of Sarcoma of the Choroid. *J. Bruce Hamilton, Hobart, Australia.* Trans. New Zealand Ophth. Soc. 2:28-35, 1948.

The incidence of choroidal sarcoma in Southern Tasmania reached the high figure of 17.43 per 10,000 cases examined, while in Northern Tasmania it resembled the English figure of 2 per 10,000 cases. Males predominated in the proportion of 8:3 and a relationship was found between the degree of pigmentation and the mortality. A more extensive operation devised to avoid any risk of expelling malignant cells into the blood stream is recommended. 10 references. 2 figures.—*H. Coverdale.*

7. Diagnostic Methods of Examination, Biomicroscopy and Photography

Scleral Tonometry and Its Optometrical Application. *Ralph E. Wick, Rapid City, S. D.* Optometr. 25:215-21, November 1948.

The importance of tonometry, gonioscopy and perimetry in optometric practice is discussed. The technic of the scleral method of tonometry is described and the importance of recognizing the presence of increased intra-

ocular pressure, not only in glaucoma but also in cases of cataract, as well as the presence of reduced intraocular pressure in other cases, is pointed out. Early detection of any abnormality in the tension enables referral of the patient for treatment before loss of vision occurs. 6 references.—*Author's abstract.*

Use of Polarized Light in Scotometry with Binocular Fixation. *Ulf Hallden, Uppsala, Sweden.* Brit. J. Ophth. 32:186-87, March 1948.

A scotometric method of examination of the central field of vision is described which utilizes polarized light and binocular fixation. An aluminized screen on which polarized light is projected is observed through polarized filters with the planes of polarization at right angles to each other. By rotating the polarizer, it is possible to extinguish the light for the eye not under investigation with the exception of the fixation light which is visible simultaneously. Either white or colored test objects of any desired size may be used. 7 references.—*R. T. Snip.*

Technic of Using the Luckiesh-Moss Visibility Meter. *Matthew Luckiesh, A. A. Eastman and S. K. Guth, General Electric Company, Nela Park, Cleveland, Ohio.* Illum. Engin. 43:223-30, March 1948.

The visibility meter contains two circular photographic gradients on film ranging from clear to rather dense and so arranged that an object may be observed with both eyes through identical parts of the gradients. These are simultaneously rotated before the eyes and can be so adjusted that the visible task as seen through them is barely visible. The gradients should not be juggled back and forth, nor should the final reading be taken by turning the meter from light to dark, because real or imaginary after images will make it appear that the object is being seen when it is not. Several trial measurements should be made to determine just how the task looks when barely visible. Better results are obtained by maintaining this criterion throughout the observations, several observers being used if possible because of individual differences. The meter is so held that the visual task is viewed at the distance it is performed. The front of the meter should be shielded from any bright or extraneous light which might cause a haze in the gradients. A shield or hood for this purpose can be easily constructed of black mat surface cardboard or similar material. A 10 degree field of view has been obtained with a hood having a rectangular opening $\frac{3}{4}$ by $3\frac{1}{2}$ inches placed 3 inches from front of the meter. It is important that enough readings be taken so that their average will be valuable statistically. 4 references. 3 charts.

The "Incident Neutral" Point in Retinoscopy. *Joseph I. Pascal, New York, N. Y.* Arch. Ophth. 39:550-51, April 1948.

The term "neutral point" in retinoscopy generally refers to the point in space at which emergent rays from the patient's eye meet. "Emergent neutral" would be more appropriate because it is due to a certain vergence of the emergent light. However, there is another neutral point which is obtained when the incident light focuses in the plane of the patient's pupil. In the latter case there are no reflex movements observable regardless of the refractive condition of the patient's eye. This may be called the "incident neutral" because it is produced by a certain vergence of the incident rays. The incident neutral is important clinically because with modern self-liminous retinoscopes it is often easy to move the lens away from the light bulb so as to obtain convergent rays that will meet in the plane of the patient's pupil. This may yield the phenomena of neutralization in spite of the presence of a refractive error.—*Author's abstract.*

The Effect of Mirror Hole in Retinoscopy. *Joseph I. Pascal, New York, N. Y.* Am. J. Optometr. 25:92-94, February 1948.

At the stage of neutralization the mirror and sight-hole are sharply focused on the patient's retina. The image of the hole must be a dark area on the fundus from which no light emerges. Whence then, comes the reflex? To the usual explanation of scattered light due to irregular refraction and aberration may be added another factor, the formation of two different images on the retina. One is the image of the effective light source, the other is the image of the mirror itself. The two act somewhat antagonistically with reference to the image of the sight-hole. When the light-source image is in sharp focus, the effect of the hole disappears. When the image is diffuse, the sight-hole appears as a dark area. It is just the reverse in relation to the image of the mirror. Because both cannot be in focus at the same time, the retinal image of the sight-hole is always illuminated. An analysis of the darkening effect of the hole on approaching neutralization shows that this is less when approaching neutralization from the "with" side with convex lenses than from the "against" side with concave lenses. This is one reason why it is generally easier to neutralize from the "with" side.—*Author's abstract.*

8. Ocular Movements and Motor Anomalies, Nystagmus, Reading Disability

Eye Movements During Monocular Fixation. *Mary P. Lord and W. D. Wright, Imperial College of Science and Technology, London, England.* Nature 162:25-26, July 3, 1948.

The photoelectric corneal reflex method of measuring the monocular fixation eye movements of a supine observer has been applied to the study of those of M. P. L. and W. D. W. The main feature of the steadiest eye movement records, after correction for head movements, is a flick, duration about 0.025 sec., amplitude 3 to 14 minutes of arc and frequency of 2 seconds for W.D.W. and 3 every 2 seconds for M.P.L. The records indicate that, after each flick, the eye took up a fixation direction displaced a few minutes of arc from the previous one; after-image experiments seem to support this conclusion. The variations in fixation ability which occurred from time to time exceeded any depending on type of target. There is little evidence of the small high frequency movements previously reported. 4 references. 2 figures.—*Author's abstract.*

Compensatory Cyclo-Torsion Accompanying Head Tilt. *William G. Walton, Jr., Pennsylvania State College of Optometry, Philadelphia, Pa.* Am. J. Optometr. 25:525-34, November 1948.

This article first traces the history of compensatory cyclo-torsion of the eyeball through the last one hundred and twenty-five years. Between 1826 and 1900 investigators were about equally divided in opinion regarding the presence or absence of this torsion. Since 1900 investigators all agree upon its existence but differ in opinion as to the amount. The author attempted by both objective and subjective methods to measure quantitatively the amount of compensatory cyclo-torsion. In both methods astigmatic patients were used. The objective determination was performed using an ophthalmometer. The primary principal meridian was determined with the head held in a straight position. By means of guide lines attached to the headrest the head was tilted 15 degrees to the right and the primary principal meridian again determined. This was repeated for 15 degrees to the left and an average obtained. The same procedure was repeated for a 30 degree head tilt. The subjective determination was performed using a specially constructed framework with guide lines for controlling the head tilt, and a projecto-chart and Cohen slide for determining the position of the principle meridians of the astigmia of the eye. In both methods, the difference between the known tilting of the head and the determined position of the meridians showed the amount of turning of the eyeball. The validity of the findings was determined using the standard deviation method. The results showed, within the limits of tilting the head 30 degrees toward the shoulder, a compensatory cyclo-torsion of 32.86 $\pm$ 3.33 per cent. 6 references. 5 tables. 3 figures.—*Author's abstract.*

The Effect of Testing Method on Values Obtained for Phoria at Forty Centimeters. *Monroe J. Hirsch and Lois B. Bing, School of Optometry, Ohio State University, Columbus, O.* Am. J. Optometr. 25:407-16, September 1948.

A report of an explanatory investigation of the near point phoria on 38 trained observers determined by two examiners using the von Graefe prism diplopia test with two types of fixation characters as the stimulus to accommodation, one the large letter E, and the other the smallest legible type on the near point test card; and a modified Thorington test. The results are discussed quite fully from a statistical and clinical point of view and indicate that the three tests when carefully performed give approximately the same average result, with the Thorington test showing rather consistently about 1Δ less exophoria than the other two tests. The average difference between test and retest is about 2Δ for the prism diplopia tests and about 1Δ for the Thorington test. The point is made that possibly a greater variation may be expected with untrained observers. 12 references. 3 tables.—*K. B. Stoddard.*

The Variation of Phoria with Age. *Monroe J. Hirsch, Mathew Alpern and Henry L. Shultz, School of Optometry, Ohio State University, Columbus, O.* Am. J. Optometr. 25:535-41, November 1948.

The measurements for phoria at 40 cm. and at 6 M. for 1,192 persons between the ages of 6 and 50 years were analyzed. The coefficients of correlation between age and each of the phoria measurements were in both cases statistically significant, the phoria at 6 M. progressing toward more exophoria with increased age. The regression formulas are presented for the use of those who wish to make suitable correction for age. It is pointed out that the amount of change over a 50 year age range is less than the value of one standard deviation of phoria measurement. The work of other authors, and particularly the recent work of Scobee and Green is reviewed. 17 references. 3 figures. 2 tables.—*Author's abstract.*

Clinical Investigation of A Method of Testing Phoria At Forty Centimeters. *Monroe J. Hirsch, School of Optometry, Ohio State University, Columubus, O.* Am. J. Optometr. 25:492-95, October 1948.

A further report on measurement of the near point phoria using the von Graefe prism diplopia test and a modification of the Thorington test. Results have previously been reported on trained observers (*Hirsch and Bing*, Am. J. Optometr. 25:407, 1948). This paper is concerned with the results of measurements on 200 clinic patients. It is found that both tests are reliable if carefully performed giving average

results of 4Δ of the exphoria for the prism diplopia test, and 3Δ of exphoria for the modified Thorington test. The 6Δ of exphoria usually stated as the average value for the phoria for 10 cm. fixation is again shown to be too high. It appears from this study that the modified Thorington test is to be preferred as it is somewhat more repeatable, simpler to administer, less time consuming and capable of better controlling the accommodation. 1 reference. 2 tables.—*K. B. Stoddard.*

Effect of Vibration upon Reading. *Miles A. Tinker, University of Minnesota, Minneapolis, Minn.* Am. J. Psychol. 61:386-90, July 1948.

A study was made of the effect of vibration upon speed of perception in reading. The experiment was done in a light room with 16 foot-candles of diffused illumination. Two groups, each of 69 students, served as readers. The material consisted of Forms I and II of Tinker's Speed of Reading Test. Score was the number of items, each consisting of 30 words, read by the student. The reading stand was made to vibrate through known amounts and rates by a motor. It also could be clamped rigid with the motor running to get the same noise background. The controls read the test with the copy stationary but with the noise present. The experimental group read Form I with stationary copy and noise and Form II with vibrating copy. The movement approximated the vibration while riding on a fast train. Every student read for ten minutes on each form of the test and a three minute rest was given between each form. In the experimental group, for five minutes of reading, vibration of the copy reduced speed of perception in reading by significant amounts, about 5 per cent. The same reduction was reached after ten minutes of reading. The speed of reading technic, when standardized tests are employed in an adequate experimental design, may be used advantageously to measure readability of print. 5 references. 1 table.

References to Current Articles

Duane's Retraction Syndrome. (*Syndrome de rétraction du globe oculair*). *J. E. Pelletier.* Laval méd. 13:1224-26, December 1948. A 6 year old boy had squinted since he was 2 years old. His birth had been normal. He showed the typical signs of retraction syndrome. Because his appearance was good in the primary position, operation was not indicated.—*C. McCulloch.*

9. Anomalies of Refraction and Accommodation, Contact Lenses

Real Significance of Centering a Contact Lens. *Joseph I. Pascal, New York, N. Y.* Arch. Ophth. 39:514-16, April 1948.

One of the most important requirements for perfect imagery in an optical system is that the component elements be properly centered on a common axis. When a contact lens is placed on the eye, the cornea

of the lens replaces the cornea of the eye in a very real sense. The cornea of the eye loses most of its refractive power. The optical system of the eye is now made up of the lens cornea and the crystalline lens. To get the best optical effect of the contact lens, the lens cornea should be centered with the crystalline lens. Objectively this is impossible but subjectively it is not. If as the patient turns his head to the right the vision improves in the right eye, we may assume that contact lens, whose movement lags behind that of the eye, was slightly out of line with the optic axis.

Contact Lenses. *Placidus J. Leinfelder, State University of Iowa, Iowa City, Ia.* J. Iowa M. Soc. 38:413-15, September 1948.

Indications for contact lenses are optical, occupational, medical and cosmetic. The first includes cases in which satisfactory vision cannot be obtained otherwise as in cases of irregular astigmatism from corneal scars, unilateral aphakia, etc. Contact lenses may be necessary for certain athletes, factory workerss, sailors, actors, etec. There are few medical indications and most patients use contact lenses for cosmetic reasons. This is not sufficient cause for prescribing them and every effort should be made to persuade patients from wearing them unless they are definitely indicated.

The molded type of contact lens is probably most generally satisfactory. The nonmolded type must be fitted from a trial set. Psychologic factors are often the chief factor in the success or failure of contact lenses. Their wearing time varies with the individual, some persons being able to wear them four to eight hours and others only one and a half to two hours. The wearing time of the latter group may be considerably prolonged by frequently removing the lens and changing the solution. Some patients can wear these lenses continuously for several days but this should be discouraged as it invariably causes superficial keratitis.

(*Well considered advice from the voice of experience more interested in the welfare of the patient than in the profits to be gained by promiscuous sale of contact glasses.*—W. H. L.)

The Use of Contact Lenses. *Frederick Ridley, Central Ophthalmic Hospital, London, England.* M. Press 220:489-90, Dec. 8, 1948.

Contact lenses are held in position by lid pressure and are usually inserted with a solution approximating tears. They may be ready made or individually fitted. They can rarely be worn with perfect comfort but are necessary for cases of keratoconus and some cases of corneal irregularity. Limiting factors in their use are discussed. Veiling which is a clouding of the sight after one-half to several hours wear, is believed caused by a negative pressure developing under the lens and causing

an edema of the cornea and conjunctiva. It is treated by cutting channels on the under surface of the lens, drilling a suitable hole in the lens or using a hypertonic solution or solutions of increasing tonicity under the lens. Defective fitting is the other principal limiting factor. Most patients wear their lenses at least four hours with comfort, then change the solution with or without a rest and wear the lenses for one to two additional periods every day. They can rarely wear them continuously all day. Check of 19 cases showed that 16 could wear their lenses four to six hours at a time, 10 could wear them eight hours daily and 7 all day. 1 table.

(*A clear statement of facts to be gleaned from intelligent consideration of everyday problems presented by fitting and the use of contact lenses.*—W. H. L.)

Measurement of Accommodation and Convergence Time as Part of a Complex Visual Adjustment. *Roland C. Travis, Tufts College, Medford, Mass.* J. Exper. Psychol. 38.395-403, August 1948.

The speed of monocular and binocular accommodation and convergence was tested as part of a complex visual adjustment by use of a drop-frame tachistoscope. This device presented either the far or near stimuli successively in such a manner as to avoid accommodative adjustment. The total average time for binocular vision in refixating near and far stimuli successively was 1.06 sec. for 50 subjects. This maneuver includes visual acuity, recognition of the stimulus, an oral report, a manual movement of the lever, accommodation and convergence. The total average time taken by 50 subjects for convergence and accommodation alone in binocular refixation of near and far stimuli was 0.20 sec. Binocular refixation was somewhat superior to monocular refixation of near and far stimuli. There was no significant difference between right and left eyes. There was a considerable and consistent practice effect for the over-all task but there was little or no practice effect for accommodation. There were large individual differences both in times for over-all performance and in actual times for accommodation and convergence. Intercorrelations among the over-all performance of refixating near and far stimuli, visual acuity, perceptual speed and motor speed indicated that the last three contributed definitely to the over-all accommodation and convergence task. 16 references. 2 tables. 3 figures.

(*One plausible conclusion might be that the routine time elapsed has little significance in a "complete visual adjustment."*—W. H. L.)

Some Problems in Refraction. *Lincoln F. Steffens, Dubuque, Ia.* J. Iowa M. Soc. 38:410-13, September 1948.

Eye refractions should be made under a cycloplegic in everybody less than 41 years old. It is sometimes needed in patients over 40 but a mydriatic should not be used in those over 50. Atropine sulfate is routinely used as a

cycloplegic in children under 12 years. School children are given 1 drop of 4 per cent cocaine followed in two or three minutes by 2 drops of a 0.5 per cent scopolamine solution which is repeated in ten minutes. Refraction is begun one hour later. The cross cylinder is valuable for determining the axis and strength of a cylinder. The crossed cylinder alone does not indicate whether the lens should be increased in 1 meridian or decreased in the meridian at right angles, or both. The proper change can be determined by crossing through with cylinders. It is important that the muscle balance at 33 cm. be ascertained in checking phorias or tropias. Spherical equivalents are not used in correcting high degrees of astigmatism until the full astigmatic correction has been found unsatisfactory. An annual ophthalmologic examination is desirable even without a complete physical. 0 references.

(*Categorical instructions in regard to methods of refraction and the use of mydriatics have their place in textbooks but after all represent one man's opinion.*—W. H. L.)

A Further Study of Effects Induced by Anisometropic Corrections. *V. J. Ellerbrock, School of Optometry, Ohio State University, Columbus, O.* Am. J. Optometr. 25:430-37, September 1948.

A study of compensation for vertical heterophoria induced by anisometropic corrections for various directions of gaze through the refractive correction. An instrument is described which permits precise measurement of the vertical phoria through the anisometropic refractive correction in spectacle form, or alternatively through trial lenses so positioned that no induced vertical phoria is produced. By measurements upon patients utilizing this instrument it was found that compensation, defined as the difference between the measured vertical heterophoria and the prismatic imbalance induced by the anismetropoc correction, is approximately equal to the prismatic imbalance. The findings for 1 subject suggested that both a variable compensation and fusional movements of the eyes were involved in maintaining single binocular vision. 6 references. 6 figures.—*K. B. Stoddard.*

Emmetropia at Near. *Joseph I. Pascal, New York, N. Y.* 85:33-34. Optic. J. &. Rev. May 1, 1948.

The concept of emmetropia at near, has been loosely used, but it has a definite connotation if by this is meant placing the ametropic eye at near in the same condition as the natural emmetrope is at near. For it can be shown by a study of the accommodative unit that the corrected ametrope does not see things at near with the same amount of accommodative effort as does the natural emmetrope. In order that he may behave like a natural emmetrope in near vision, his correcting lenses have to be modified. The corrected hyperope needs a stronger plus correction and the corrected myope needs a stronger minus correction. The increase in power depends upon several

factors and varies with the distance of fixation. The explanation for this fact is that the corrected ametrope has an accommodative unit which is not 1.00 D. as it is in the natural emmetrope. It is more than 1.00 D. in hyperopia and less than 1.00 D. in myopia. This affects also astigmatic corrections which have to be correspondingly increased for near vision. Note is also made of the effect of these changes on muscular imbalance for far and near and of the prismatic effect of correcting lenses in partly neutralizing these changes.—*Author's abstract.*

(*Bringing an ametropic eye to emmetropia by correcting lenses is only one step in the effort to provide comfortable glasses for near work. Due consideration must be given to the individual muscle balance, etc. No rule of thumb will suffice. Neither the corrected hyperope nor the corrected myope always requires more plus or more minus respectively. The "accommodative unit" and the reporter both may be mistaken.*—W. H. L.)

The Effect of a Simple Group Training Method Upon Myopia and Visual Acuity. *A. E. Sloane, E. B. Dunphy and W. V. Emmons, Massachusetts Eye and Ear Infirmary, Boston and J. R. Gallagher, Philips Academy, Andover, Mass.* Research Quart. 19:111-17, May 1948.

Most training methods for improving myopia are time-consuming and expensive. The effectiveness of inexpensive group training requiring a comparatively small amount of the subject's time was therefore investigated. The procedure was supervised by an optometrist but carried out by an assistant who had no previous experience in this work. Preliminary and final visual examinations consisted of determination of vision without lenses, the refractive error, and measurements of heterophoria, no cycloplegic being used. The refractions were done separately by 2 ophthalmologists and the optometrist on the same day, each refracting in accordance with his usual office procedure.

The training group was composed of 8 highly intelligent but unselected boys. Each met with a group of 3 to 7 members three days a week, sessions being held for seven weeks, omitted three weeks during vacation and then continued for five weeks more. Each session lasted a half-hour. The only instrument used was a three-dimensional tachistoscope. The slides "Form Training Series" were used the first four weeks and the "Digit Training Series" in the second part of the course. Use of stereoscopic slides was commenced at the beginning of the final third of the training period. Each boy used the glasses previously prescribed.

Retinoscopic findings after completion of the course showed a decreased myopia in 1 eye of each of 2 boys but there was no decrease in both eyes. The remaining 6 boys had a slight increase in myopia. These changes were small and many within the limits of error but there was no apparent significant reduction in myopia in any case. While no significant

change in either naked vision or refractive error was obtained by this method, the group studied was too small for proper evaluation of this or similar methods. Further similar studies are recommended. 3 references. 2 tables.

References to Current Articles

Role of Corneal Variability in Contact Lenses. *Joseph I. Pascal, New York, N. Y.* Ophthalmologica 116:318-21, December 1948.

Contact Lens Haze. *John Collins Neill, Pennsylvania College of Optometry, Philadelphia, Pa.* Am. J. Optometr. 25:461-79, October 1948.

A Summary of Certain Viewpoints in Fitting Contact Lenses. *Charles S. Bridgman, Port Washington, N. Y.* Am. J. Optometr. 25:359-69, August 1948.

10. Conjunctiva

The Use of Anti-Allergic Drugs in the Treatment of Phlyctenular Ophthalmia. *C. F. Bowes, London, England.* Brit. J. Ophth. 32:163-64, March 1948.

Fifteen children from 2½ to 11 years of age with clinical phlyctenular disease, positive Mantoux test, and roentgen ray evidence of tuberculosis, were treated with Benadryl and Antistin in an effort to alleviate photophobia, irritation, lacrimation and eczematous conditions associated with phlyctenular disease. Both drugs were used in 7 cases, with an interval of one week between the two courses of treatment. Benadryl was used in 12 cases. One case showed improvement which was probably spontaneous. No side effects were observed. Antistin was used in 10 cases with none improved. Side effects, particularly giddiness, were noticeable.—*R. T. Snip.*

(*Phlyctenulosis is a Bacterial Allergy, most commonly an Allergy to the Bacterial Proteins of the Tubercle Bacillus. The Editor has seen no evidence to suggest that the Antihistaminic Drugs should be effective in this type of Allergy.*—P.T.)

Pterygium. *Graeme Talbot, Auckland, New Zealand.* Trans. New Zealand Soc. 2:42-45, 1948.

During the last three years 683 patients have been admitted to the ophthalmic wards of the Auckland Hospital. Of these, 260 were admitted for operation for pterygium, compared with only 105 admitted for extraction of cataract. Less than 1 per cent of the admissions were for recurrence of the growth after operation. Eighty-five per cent were males and 21 per

cent were under the age of 30. The author regards sunlight as a more important factor in etiology than dust. In his opinion conjunctiva follows an ingrowth of vessels. He prefers McReynold's operation in which the growth is transplanted upwards. 4 references.—*H. Coverdale.*

Some Conjunctival Affections. *Rowland P. Wilson, Dunedin, New Zealand.* Trans. New Zealand Ophth. Soc. 2:4-27, 1948.

The author's presidential address to the New Zealand Ophthalmological Society is based on his nineteen years of experimental and clinical work at the Memorial Ophthalmological Laboratory at Cairo. He discusses various points affecting the etiology, histopathology, and diagnosis of trachoma and certain other bacterial, follicular, and allergic diseases of the conjunctiva. Much of the matter has appeared in the Annual Reports of the Memorial Laboratory, and elsewhere, and the field covered is too wide to abstract. 12 references. 2 graphs. 28 figures.—*H. Coverdale.*

Severe Erythema Multiforme of the Pluriorificial Type (Stevens-Johnson Syndrome). Resulting in Blindness in a Patient Treated with Trimethadione (Tridione). *Bertram Shaffer and Paul Morris, Mt. Sinai Hospital, Philadelphia, Pa.* Pediatrics 2:30-34, July 1948.

A case of severe erythema multiforme of the pluriorificial type in a 6 year old white boy resulted in total blindness because of bilateral involvement of the cornea. The eruption followed administration of Tridione and anterior pituitary extract. Because of mental retardation and petit mal, the patient received 6 injections of an anterior pituitary extract (Polyansin) in doses from 0.5 to 1.0 cc. at intervals of from two to five days. Tridione, 0.3 Gm. twice a day, was also given. At about the time of the termination of treatment, a red spot appeared on the buttock and swelling occurred. The lips and eyelids also swelled. At this time another injection of anterior pituitary extract was given in the opposite buttock, with no local reaction. The next day blisters occurred about the lip. Tridione was discontinued, and 240,000 units of penicillin were given over twenty-four hours. A generalized eruption occurred, with fever, severe cough and dyspnea. For one week the cutaneous manifestations became more severe, and the hemorrhagic phenomena more pronounced. The disease had the character of a pure bullous and purpuric eruption. The cutaneous picture then began to subside but the severe character of the eruption on the mucosae continued. The glans penis was the site of a weeping erosion for about one month. The disease was most persistent and destructive on the conjunctivas. Corneal ulcerations healed with the formation of white opacities, producing blindness. The right upper lid became attached to the eyeball. Systemic treatment involved intramuscular injections of penicillin and streptomycin, fluids by mouth, saline and glucose intravenously, and plasma. The eyes were treated by frequent boric acid lavage and local instillations of 1 per cent atropine

and penicillin solution. An attempt was made to prove drug etiology by passive transfer tests. Patch tests were applied over the sites where serum or blister fluid had been injected previously in a normal subject. The suspected allergens injected were Tridione, 0.2 per cent. aqueous suspension, and pituitary extract, 25 per cent aqueous solution. The patch test material consisted of 25 per cent concentration of each of the above preparations in cholesterinized petrolatum. All tests were negative. Injection of the patient's serum, 0.1 cc., intradermally into a normal subject, followed twenty-four hours later by injection of 0.3 Gm. of Tridione, produced no positive reaction. Fluid drawn from an early bulla was tested for virus with negative results. 19 references. 1 figure.

(*Erythema multiforme with conjunctivitis is quite common but blindness secondary to corneal involvement in the disease is fortunately rare. In the editor's experience instances of proved drug sensitivity as a precipitating factor are almost unknown and the disease must still be considered one of unknown etiology.*—P. T.)

Trachoma. A Clinical Review. *Dwight Howe Trowbridge, Fresno, Calif.* Eye, Ear, Nose & Throat Monthly. 27:357-62, August 1948.

Trachoma is classified into four types. In the first, the conjunctiva may be reddened, swollen and hyperemic, with faint subepithelial follicles dotting the tarsus. In the second, bleb-like excrescences project above the conjunctival surface. They are easily ruptured by manipulation or pressure. Other cases in this group may show a generalized papillary hypertrophy. Follicles and excrescences are being absorbed in the third type. The conjunctiva is less thickened but scar tissues cause surface irregularity and perhaps inversion or eversion of the eyelids. Pannus is evident. In the fourth type, there is pannus with corneal scarring but no active inflammation. The infectiousness of trachoma seems to have been well established. Its incidence increases during the fly season. Scrupulous general hygiene, screening and fly elimination are the best preventive measures. Trachoma seems to be susceptible to the sulfonamides and the results of such treatment, while not dramatic, warrant continuance, most reports claiming that sulfonamides completely heal trachoma. Treatment should be continued until the corneal infiltrates disappear and punctate epithelial staining indicates inactivity. Sulfadiazine is considered as effective and less toxic than sulfanilamide. 22 references. 3 figures.

(*Trachoma is still a problem in the United States in spite of the effectiveness of Sulfonamide Therapy. Recognition of early cases now seems to be the main problem. Recent studies suggest that Aureomycin may prove to be even more valuable than the Sulfonamides in Therapy.*—P. T.)

Arthritis, Conjunctivitis, and Urethritis (So-Called Reiter's Syndrome) in a Four-Year-Old Boy. *Alfred L. Florman and Harold M. Goldstein, New York, N. Y.* J. Pediat. 3:172-77, August 1948.

The case history is presented of a 4 year old boy who, following a short period of diarrhea, developed arthritis, conjunctivitis and urethritis. Recovery from this syndrome, was accompanied by a gradual decline in S. flexner agglutinins from a level of 1:1,280 to 1:40. The significance of this observation is not clear. Attempts to recover a pathogenic microorganism, pleuropneumonia-like organism, or a virus from the joint fluids, urethral discharge and conjunctival smears were unsuccessful. 14 references. 1 figure.—*Author's abstract.*

A Discussion of Reiter's Syndrome with Report of a Case. *Clifford A. Swanson (Rear Admiral, M.C., U.S.N.) and Adrian J. Delaney (Capt., M.C., U.S.N.)* U. S. Naval M. Bull. 48:503-509, July-Aug. 1948.

Reiter's syndrome is poorly understood. Most cases have appeared in young men of military age and only 1 case has been reported in a female. It is difficult to define what is included in the definition of Reiter's disease. Reiter emphasized the daily variations in body temperature, from 98.6 in the morning to 102.2 F. in the evening and with nightly sweats. He found an associated spirochete, which he termed *Spirochaeta forans* but which has not been found by subsequent workers. His case was marked by a diarrhea, followed in eight days by purulent urethritis, and one day later by joint pain and swelling and purulent conjunctivitis. The disease involves the classic triad of urethritis, conjunctivitis and arthritis. Other manifestations should be considered as complications. The etiology is obscure. All the manifestations of the disease, except the occasional diarrhea, have been found in gonorrhea, and the disease has occurred in young individuals with sexual vigor. The gonococcus, however, has never been detected. A case is described in a 44 year old white male. He had developed a urethral discharge. Examination revealed slight inflammation of the meatal mucosa and skin and two shallow ulcers on the corona. Rectal study showed periprostatic induration and the expressed secretion contained pus cells. There were photophobia and irritation. All therapy seemed to be useless. Twenty days later the conjunctivitis was much worse and the patient developed an inflammation in the interphalangeal joint of the left thumb and some aching pain in the left shoulder. The urethritis continued. Hyponychia involved all the nails of the hands and feet. At twenty-five days a superficial punctate keratitis was seen in both eyes but it cleared with treatment. Streptomycin caused slight improvement of the urethritis which then began to subside. There was an apparent increase in the arthritic symptoms, with many new joints becoming involved. One month after this period the left eye presented a fully developed iridocyclitis with ciliary injection and tenderness, plastic exudate, cells in the anterior

chamber and deposits on the corneal endothelium. This subsided under treatment but the right eye began to go through the same cycle. As ocular symptoms subsided, arthritic symptoms began slowly to subside. There was never any clue as to the causative agent. Roentgenograms never showed evidence of bone or joint pathology. 28 references.

Reiter's Syndrome. *Alfred Letchner, Harrow Weald, Middlesex, England.* Brit. M. J. 4531:747-47, Nov. 8, 1947.

Since Reiter's syndrome has been reported as occurring mainly in young adults, the following case would seem to be worth recording: On July 23, 1945, an engineer, 55 years old, was seen for purulent urethritis. No gonococci were found in the discharge. On August 3 the discharge ceased after 20 m. of sulfathiazole. By that time bilateral purulent conjunctivitis had developed, again without gonococci in smears. On August 10 the eyes were nearly normal.. There was painful swelling of the interphalangeal joint of one foot which disappeared after ten days. On August 15 pains started across the shoulders and in the lumbar region, possibly due to spinal arthritis. This lasted for more than two months. There were no changes demonstrable in a film of the spine and there was no diarrhea before or during the course of the illness.—*Author's abstract.*

(The three cases of Reiter's disease here reported are of special interest because of the unusual ages of the patients: 4, 44 and 55 years, respectively. Of interest also is the occurrence in 1 of the cases of a punctate keratitis and a plastic iridocyclitis, both rare findings in this disease. Of the three current theories of etiology, i.e., sensitivity, pleuropneumonia organisms, a virus, the viral theory seems the most promising.—P. T.)

11. Cornea, Sclera and Tenon's Capsule

Corneal Transplantation. *R. Townley Paton, Manhattan Eye, Ear, Nose and Throat Hospital and New York University, New York, N. Y.* New Orleans M. & S. J. 101:25-30, July 1948.

The author has had over ten years experience in doing keratoplasty. A brief historic review of the high points in the development of the surgical technic is followed by a discussion of the selection of cases favorable for operation. No general rule may be applied for the selection of cases favorable for corneal transplantation. Each case must be dealt with individually and a general appraisal made. In studying the patient's eye condition, certain factors must be taken into consideration. Environmental factors have to be considered. As a general rule, cases with corrected vision better than 20/200 are not operated upon. Exception to this rule are those cases in which the vision can be improved with the use of contact lenses but where the patient cannot tolerate these lenses. The best results

have been obtained in cases of conical cornea and in Groenouw's type of corneal dystrophy. Cases where tattooing was formerly employed can frequently be helped by transplantation. Cases of descemetocele may be cured by corneal transplantation and in some instances marked visual improvement has resulted as well. The prognosis is not favorable where the cornea is densely vascularized. The cases should receive preliminary beta radiation. In the operative technic of partial penetrating keratoplasty, use of the trephine for cutting the window is preferred by the author for the following reasons: (1) better cosmetic result; (2) outline of window made easier because of adjustable stop on trephine. Adjustable stop also prevents trephine from becoming dulled during sterilization; (3) donor window is cut through completely with trephine, eliminating use of scissors and unnecessary manipulation of donor graft; (4) specially curved scissors used to complete cutting of window in host's eye more easily manipulated than the straight scissors used in the square graft.

The donor eye is brought from the Eye Bank at the time of operation. The proper size graft is cut and the same size trephine is used on the host. No donor eye is used that has been kept more than two days. Corneas from glomatous eyes are not used. Eyes with intraocular tumors may be used if the tumor is confined to the posterior segment. As a general rule, glaucomatous eyes do not make favorable donor material as there is frequently a bedewing and edema of the endothelial surface. An eye with intraocular infection should not be used, even if the cornea is clear. Eyes of stillborn are not favorable as the tissues are too malleable and delicate, and there is greater tendency for postoperative edema following the operation. The upper age limit is not known — eyes of people in their late sixties have been used with favorable results. The steps in the operation are: (1) Outlining the window using a trephine with an adjustable stop to prevent penetration. (2) Placing of two figure-of-eight D&G 7-0 sutures, one black and one white. Each bite is taken as close to the outlined window as possible. (3) Placing central suture for traction. (4) Sutures are laid aside and penetration completed using same trephine after adjustable stop has been removed. (5) Cutting of window completed by use of specially curved scissors. (6) 3 per cent atropine dropped directly on the iris through the open window. (7) Previously prepared donor graft placed in position and sutures securely tied. Postoperatively the patients are treated much in similar fashion as in cataract cases. The first dressing is done forty-eight hours after the operation. Atropine and antiseptic are instilled. Sutures are removed on the tenth or eleventh day. 6 references.—*Author's abstract.*

Keratitis Filamentosa Caused by Plastic Contact Lenses. *A. C. Cooper and J. C. van Manen.* Ophthalmologica. 115:377. June 1948.

This condition developed in a myopic individual who had had to wear on one occasion contact lenses without interruption for eighteen hours in the course of duty. Immediately on removal of lenses both eyes showed

signs of irritation: blepharospasm, pain and lacrimation. Examination disclosed injection of the conjunctiva in both eyes, but without chemosis. The cornea was covered with eroded spots of pin-point size. These pits did not reach down beyond the epithelial layer and the stroma remained clear. Treatment with compresses brought no relief and within three days the epithelium erupted in the form of filaments. These were 4 mm. long and presented a beaded appearance, due to constriction. A small area in the epithelium around each filament was infiltrated but the tissue in between appeared quite normal. The filaments were removed daily, by swabbing the cornea with cotton but new ones continued to form for a period of fourteen days. Microscopically they were showed to consist solely of the epithelial cells. At the end of this period they ceased to form and complete recovery followed. However, the corneas showed a distinctly lowered sensitivity, as an after effect of prolonged contact with the plastics. This was due to proliferation of the epithelium around the nerve endings, which resulted in a thickening of the latter. The condition, never before reported in the literature, was entirely independent of the filament formation. The authors believe that the epithelial eruption followed traumatic injury caused by the pressure of lenses upon the cornea. The resulting trophic disturbances in the nerve fibers finally affected the nerve endings and produced the lowering of sensitivity, in addition to the filament discharge.

Treatment of Chronic Glaucoma with Nicotinic Acid (*Traitement du glaucoma chronique par l'acide nicotinique*). *C. Monfette.* Union med. du Canada 77:1433-35, December 1948.

Glaucoma is a diencephalic affection with accompanying vasomotor and atropic changes, and ocular hypertension. Glaucomatous optic atrophy is a descending atrophy, resulting from a dysfunction of the thalamus and hypothalamus which causes change in the capillary circulation and localized oedema in the optic nerve. Nicotinic acid, by its vasodilating action will combat these changes. Nicotinic acid treatment may be helpful for cases of chronic simple glaucoma with a tension under 50 mm. Hg. It is useless for acute glaucoma, secondary glaucoma, hemorrhagic glaucoma, long standing glaucoma with high tension and chronic glaucoma with low retinal arterial tension. Two patients were given two therapeutic tests, which consisted in giving 2 mg. nicotinic acid intravenously, and taking the ocular pressure every fifteen minutes for one hour after the injection. Following favorable responses they were given 1 mg. nicotinic acid twice a day. The ocular tensions of both patients remained normal.—*C. McCulloch.*

(This is a theory which is difficult to make confirm to conventional ideas about chronic simple glaucoma. The atrophy actually descends from the margin of the optic cup to the ganglion cells of the retina and ascends through the optic nerves and tracts. There is no appreciable edema of the optic nerve in spite of the circulatory embarrassment. More than 2 patients should be tested with nicotinic acid before opinions are expressed.—B. F. P.)

12. Anterior Chamber and Pupils

See Contents for Related Articles

13. Uveal Tract and Sympathetic Ophthalmitis

Sympathetic Ophthalmitis. *C. K. Bhalerao, Raipur, India.* Antiseptic 45:377-80, June 1948.

This is a specific bilateral inflammation of unknown etiology and affecting the entire uveal tract. It first appears in the injured or exciting eye a variable time after injury and soon afterwards in the sound or sympathizing eye. The disease incidence is decreasing because of improved surgical treatment of eye injuries. Perforating wounds, especially when the foreign body remains in the eye, seem responsible for about 65 per cent of cases, operative wounds another 25 per cent, and scleral rupture, perforating corneal ulcers and intraocular tumors the remaining 10 per cent. Inflammation usually develops between the fourth and eighth week after injury and will probably not appear after three months, though the possibility of its appearance is indefinite. There are two theories of origin of sympathetic ophthtalmitis: infective and allergic. The former has not been confirmed bacteriologically but the granulomatous nature of the inflammation and its general resemblance to tuberculosis has suggested a tubercular infection. The lymphocytic infiltration suggests that the condition may be lymphocytic uveomeningitis caused by a filterable virus but this also is unconfirmed. The allergic theory has little support, general opinion regarding the disease as of infectious origin, probably a virus. The route of infection from the exciting eye is believed to be the blood stream. Symptoms are a persistent, low grade uveitis in the exciting eye with redness, injection, irritability, tenderness, pain and lachrimation. Onset is insidious in the sympathizing eye with obscured vision, lachrimation, circumcorneal congestion and indications of iridocyclitis. Keratic precipitates develop in either or both eyes, followed by haziness of the vitreous, adhesions between the iris and lens, and later choroiditis. The disease is chronic with a tendency to relapse. The eyeball becomes shrunken and should be enucleated to prevent relapse. Early diagnosis is essential if vision is to be saved in at least one eye. It is based upon the early appearance of free floating particles in the aqueous and vitreous which are deposited behind the cornea. Sympathetic ophthalmitis may be excluded if these are absent. Treatment is atropine drops and ointment from the beginning, paracentesis being performed but the atropine not stopped if increased tension develops. Salicylates and mercury inunctions have been tried, the former being preferred. Injections of diphtheria antitoxin 20,000 units daily, typhoid vaccine and milk have been useful. Early enucleation of the unexciting eye is the best way of saving the other. If the sympathizing eye is already involved, symptomatic treatment is used until the inflammation subsides and then the eye having the poorest vision is enucleated. 2 references.

Sympathetic Ophthalmia. Report of a Case. *William W. Hart, Shreveport, La.* New Orleans M. & S. J. 101:85-87, August 1948.

A case of this disease is reported in a 48 year old Negress who received a penetrating wound of the right cornea by a piece of glass from an exploding beer bottle. The wound was closed by sutures and a conjunctival flap but pain, injection, sensitivity to light and marked lacrimation persisted. Redness, pain and impaired vision developed in the left eye about seven weeks later. Sympathetic ophthalmia of the left eye was diagnosed and treated with atropine and penicillin. The right eye was enucleated and intravenous typhoid therapy given followed by other fever therapy. She was discharged almost three months later. Vision in the right eye was 20/20 at last examination. The incidence of sympathetic ophthalmia is uncertain but it is becoming increasingly rare. Perforating wounds cause about 65 per cent of cases. The interval between injury and onset of ophthalmia varies considerably but 63 per cent of cases occur within two months and 90 per cent within a year. Prophylaxis by adequate treatment of perforating wounds is important. Sympathetic disease is best prevented by enucleation of the injured eye before establishment of the characteristic pathology.

A Case of Sympathetic Ophthalmitis of Unusual Onset Responding Satisfactorily to Treatment. *Alan W. Sichel and J. G. Louw, Capetown, Union of South Africa.* Brit. J. Ophth. 32:180-84, March 1948.

A 54 year old farmer injured his right eye with a flying wood chip resulting in a corneal laceration without iris incarceration and with loss of vision. The eye healed with use of prophylactic sulfonamides and vision became questionable light perception. Vision left eye was 6/6. Three months later he began to notice irritation in the left eye. The right eye was enucleated and ten days later a mild papillitis was noted in the remaining eye. Vision was 6/9 and rapidly fell in the next week to 6/18, and posterior synechiae and fine "K.P." began to appear. Treatment consisted of 2 million units of penicillin, intravenous neoarsphenamine, sodium salicylate by mouth and atropine locally. Sulfadiazine was started later. The patient developed tinnitus, and later secondary glaucoma with a tension of 60 mm. Schiotz and a paracentesis was performed. A later course of penicillin was instituted. Six months after the first clinical evidence of sympathetic ophthalmia the patient had a normal field and intraocular tension. It is difficult to assign credit to any one of the methods of treatment employed. 1 reference.—*R. T. Snip.*

Chorioretinitis Juxtapapillaris (Jensen's Disease). *Henry G. Bullwinkle (Capt., M.C., U.S.N.)* U. S. Navy M. Bull. 48:610-13, July-Aug. 1948.

In 1908 Jensen reported about 6 cases of a type of choroiditis which had enough characteristics in common so that a separate entity could be recognized. This is Jensen's disease or chorioretinitis juxtapapillaris. The

entity may be a chronic choroiditis. It occurs in young persons as an exudation near the disk, oval in form and about the same size as the disk. The cause is unknown. The inflammation slowly subsides leaving a patch of atrophy and a defect in the field of vision. The condition may recur. The diagnosis in the active stage may be confused with optic neuritis. The etiology, course, prognosis and treatment are the same as for a deep choroiditis elsewhere in the fundus. In mild cases the outer layer defect may be present alone and in severe cases the inner layer defect is added. The prognosis for central vision is good unless the macula is involved. Absorption of the lesion occurs from the periphery inward. It may disappear in a few months leaving an area of atrophy. The lesion may be bordered with pigment and pigment may be scattered all over the healed lesion. The vitreous opacities disappear.

A case is presented in a 38 year old male. He complained of blurred vision in the left eye lasting about three weeks. His visual acuity was normal. A few vitreous opacities were observed in the left eye. Adjoining the disk nasally there was a region of choroiditis equal to the size of the disk. The disk edges were hazy, nasally. There was a sector-shaped defect in the temporal visual field. The patient had had a similar attack five years previously, with a similar field defect. He admitted being a very heavy smoker. He had abruptly stopped smoking at the time of the first attack and smoked very little for several years. Several weeks prior to the present attack, he had increased his tobacco consumption. This habit was stopped upon admission and his vision was found to improve within a few days, although the field defect was still present upon his discharge. The disk edges were clear and there were no vitreous opacities. Tobacco must be considered in the etiology of this condition. 2 references. 2 figures.

A Case of Septic Iridocyclitis. *Santosh Kumar Mukherji, Carmichael Medical College, Calcutta, India.* Antiseptic 15:430-31, October 1948.

The case of a 69 year old woman who was suddenly seized with pain and dimness of vision in the right eye is presented. Examination showed a contracted pupil, slightly muddy iris, circumcorneal injection, and pain and tenderness on pressure over the ciliary region. The lower palpebral conjunctiva was slightly congested, there was increased tension and lachrimation of the right eye and the mental haziness of old age. Powders of aspirin, phenacetin and caffein were given for neuralgia and mercurochrome 1 per cent drops and hot boric acid compresses to the right eye. An ointment containing atropine, boric acid, sulfapyridine and vaseline was applied locally and sulfapyridine and calcelin given internally. This treatment was continued for three days. The exudate was then completely absorbed, the pupil incompletely dilated, margin irregular, redness and pain diminishing but vision unimproved. Difficulty sometimes arises in determining

if these conditions are glaucoma, iridocyclitis or conjunctivitis. This case was diagnosed iridocyclitis because of the tenderness on the ciliary body and exudation in the anterior chamber. A pneumococcus infection was considered the probable cause. 1 table.

A Further Case of Iridoschisis. *Arnold Loewenstein, Glasgow, Scotland, John Foster, Leeds, and S. K. Sledge, Wakefield, England.* Brit. J. Ophth. 32:129-34, March 1948.

Loewenstein and Foster described previously a rare type of iris atrophy characterized by ruptured radial fibers of the iris freely flating at one end in the equeous. The name of iridoschisis is suggested. The case reported is a 47 year old male with a history of two years duration dating from a broken nose and blackened eye from a fall. Ten weeks later he noticed change in the color of the right iris. Examination revealed vision correctible to 6/6 bilaterally, a blue left iris with hazed pupillary border, a darker blue iris with large areas of brownish atrophy and a slightly opaque cornea in the pupillary area. Some fibers of the anterior iris layer had torn loose and a few adhered to the posterior cornea. The pupil was oval, the tension 35 mm. Schiotz. The diagnosis was iridoschisis with secondary glaucoma probably due to trauma. A basal iridectomy was performed and recovery was uneventful. Histologic examination revealed marked loss of the spongy portion of the iris tissue with a normal sphincter and pigmented dilator. It is suggested that trauma forced aqueous carrying proteolytic enzymes into the iris tissue destroying stroma and liberating pigment which blocked drainage producing secondary glaucoma. 4 figures. —*R. H. Snip.*

14. Crystalline Lens

Cataract in Dystrophia Myotonica. *W. A. Fairclough, Auckland, New Zealand.* Trans. New Zealand Ophth. Soc. 2:36-41, 1948.

Fourteen cases are presented; 5 from one family; 3 from another; 2 were from each of two families; 2 were isolated cases. The lens changes and physical characteristics are described. 3 references. 18 figures.—*H. Coverdale.*

A Complication of Intracapsular Cataract Extraction. *F. A. Williamson-Noble, London, England.* Brit. J. Ophth. 32:161-2. March 1948.

In attempted intracapsular cataract extraction the capsule may rupture. Careful manipulation with a vectis is suggested as one means of expressing the lens. A preferred method is to pass two cystotomes into the lens lifting the lens out with counterpressure. Three cases have been performed with successful results.—*R. T. Snip.*

Chainmaker's Cataract. *L. H. G. Moore.* Proc Roy. Soc. Med. 41:725, October 1948.

This special variety of cataract develops in workers who make chains by hand. The usual link-maker worked with the fire on his left and the left cataract was always slightly more advanced than the right. This patient was presented because he showed clearly exfoliation of the anterior capsule. These workers refused to wear any protective goggles which had to be frequently removed and wiped.

15. Vitreous Humor

See Contents for Related Articles

16. Retina

Angioid Streaks of the Retina and Pseudo-Xanthoma Elasticum. *John Maude, Sydney, Australia.* Trans. Ophth. Soc., Australia. 6:108, 1946.

The author collected notes of 7 patients with angioid streaks from other oculists. In only 1 of these, as well as in his own were pseudoxanthomatous changes present. These were the first cases of this syndrome to be reported in Australia. In discussion Arthur Joyce reported 3 additional cases of angioid streaks. In 2 of these were signs of pseudoxanthoma elasticum. In 1 the condition had been confirmed by biopsy. This patient had been observed for over ten years and the changes around the disk and macula had increased and the streaks had gradually become less defined and much lighter in color, so that the streaks were difficult to trace along their course. McAllister Gregg reported 1 example of this syndrome. The onset of visual failure was traced back to a loss of consciousness due to a severe hematemesis and melena. She had received twelve blood transfusions. Bilateral Optic Atrophy was present.—*J. Ringland Anderson.*

Some Thoughts on the Surgery of Retinal Detachment. *Derrick Vail, Chicago, Ill.* Wisconsin M. J. 47:687-89, July 1948.

In the surgical treatment of detached retina, one should follow the fundamental principles of Gonin. These are: (1) finding a tear, hole or disinsertion of the retina; (2) exact localization of the hole; (3) production of adhesive choroiditis in the region of the hole, and nowhere else; (4) evacuation of the subretinal fluid. In many instances more than one hole may be found. The examination of the eye must be thorough. To estimate the position of the hole, the most valuable method is that of Gonin, by so many disk diameters from the ora serrata or, for holes in the posterior pole, from the edge of the optic nerve. The circle of light from the electric ophthalmoscope should exactly coincide with the patient's optic disk; then

various landmarks encountered in the area should be measured, so that the circle of light will touch its preceding edge. The direction of the hole is best found by Gonin's method, using the meridians of the eye. The patient should be at complete rest with his head between sandbags for three days before operation. This frequently results in recession of the detachment or the balloon. The ideal anesthesia is intravenous pentothal sodium and, if necessary, a retrobulbar injection of novocaine. The pupil should be dilated not later than four hours before surgery. The cornea should be protected during the operations. Nothing should be used during the operation which may cloud the cornea and prevent frequent ophthalmoscopic studies needed to determine the extent of ignipuncture. Only the small area of the tear should be treated with ignipunctures and only with enough to cover the ground. Staphyloma of the sclera, the cause of the detachment, is occasionally found, if searched for. It should be excised by scleral resection. Unless the staphyloma is small, success with diathermy is doubtful. During surgery the ciliary region and zones of the vortex veins should be avoided as much as possible. The more severe the postoperative reaction, the poorer is the prognosis. Secondary intraocular hemorrhages are grave. The major retinal vessels can be avoided by repeated ophthalmoscopic examinations. Choroidal detachment may occur, especially if one works too near the ciliary zone. The prognosis is poor if the retina is not back in place and the pigmented scars of the ignipuncture not easily visible after three weeks. In this instance prolonged use of pinhole goggles is unnecessary. Bilateral spontaneous idiopathic retinal detachment is a thorny problem. Repeated operations may be necessary. Scleral resection is the operation of choice when the detachment is caused by a staphyloma. When there is high myopia it is combined with diathermy. 7 references.

Inherited Retinal Detachment. *J. Bruce Hamilton, Hobart, Australia.* Trans. Ophth. Soc., Australia 6:113, 1946.

A pedigree of hereditary juvenile retinal detachment was reported. Both eyes of 10 patients were examined; 7 eyes showed retinal detachments, of which 3 resembled pseudoglioma and the retina in 1 had spontaneously reattached. Four patients had unilateral choroidoretinitis, 1 showing cyst formation. The author compared his ocular findings with the changes that are found with congenital cysts of the lungs, *i.e.*, that they may become infected and that they may rupture.—*J. Ringland Anderson.*

Congenital Pigmentation of the Retina. *O. Gayer Morgan.* Proc. Roy. Soc. Med. 41:726-27, October 1948.

An 11 year old boy who, upon routine examination, had vision of 6/6 each eye but a curious, rather symmetric arrangement of pigment along the vessels and some atrophy of the fundus in each eye. He was not night blind, the disks had good color and the retinal vessels were good size.

The question was whether this condition was congenital or inflammatory. There was no vitreal opacity and more evidence of inflammation would be expected in other parts of the eye if the condition was inflammatory. The pigment was in front of the vessels in some cases. Wassermann was negative and there was no evidence of any other abnormality in the patient or of other members of the family. 1 figure.

Congenital Grouped Pigmentation of the Retina. Report of Two Cases. *Paul Tower, Los Angeles, Calif.* Arch. Ophth. 39:536-41, April 1948.

This rare condition was well described by Stephenson in 1891 as consisting of "groups made up of black to dark chocolate brown spots, which, as seen by the direct method, range in size from 0.5 to 2 mm. or more." Hyperplasia of the pigmented cells of the retina is listed in the literature under various names: congenital pigmentation of the retina, melanosis retinae, and congenital pigmented plaques of the retina. The pathology is uncertain. The typical arrangement of the deposits in a triangular sector of the inferior part of the retina suggests a similarity to coloboma of the choroid. Two cases are reported with fundus photographs. 9 references. 2 figures.—*M. I. Henrich.*

Congenital Hole in the Disc and Degeneration of the Macula Lutea. *C. von Winning.* Ophthalmologica 115:371, June 1948.

When examined entoptically by the Scheerer method, the macula appeared yellow not as a result of pathology but due to the fact that the red portion of the spectrum had been eliminated from the light. The condition led to retinitis centralis serosa. The symptoms included acute lowering of visual acuity, central positive scotoma, enlarged Maxwell's ring, micropsia, metamorphosia and hypermetropia. In discussing the nature of this congenital defect, the author supported the assumption advanced by Streiff, namely, that the hole results from duplication of the retinal layer in the disk. This causes faulty development of the papillo-macular bundle and, in the course of time, leads to degeneration of the entire macula (cyst). Finally, the retina becomes detached in that area. In the author's case the macula showed a star-shaped tear located probably in the fibrous layer. During the discussion that followed Waardenberg pointed out the hereditary nature of this congenital malformation. In a case reported to him by Pamayer a brother and sister suffered from cystoid degeneration of the macula. Children in the same family show similar defects, which further suggests a predisposition to this condition.

Pitmentary Abnormality in Children Congenitally Deaf Following Maternal German Measles. *E. O. Marks, Brisbane, Australia.* Trans. Ophth. Soc., Australia 6:122, 1946.

The author examined the children admitted to a school for blind and deaf children during the years 1930 to 1941. Though there were few

with cataract born in the epidemic years for rubella and cataract, nearly half of the deaf children born then showed abnormally pigmented fundi. Of those born in 1938, 43 were examined and 21 showed pigmentation and 4 had cataract. Of the 1941 group 17 were examined and 7 were pigmented. Of those born in the remaining ten years 40 were examined and only 3 were pigmented. The condition resembled an atypical retinitis pigmentosa in which the "bone-corpuscle" form was absent. The maculae were coarsely mottled. The retinal vessels, optic disks and the vision appeared to be normal. N. McAlister Gregg, in discussion, stated that a similar change had been discussed in his report given in 1939. He had examined 52 children, the majority suffering from deaf-mutism, some from cataract and some from both conditions. Marked pigmentary changes were present in 16 cases and not simply in deaf mutes but in the normal eye of a patient with unilateral cataract. Gregg described the changes as blotchy. The affect zone included the macula and an area of 3 to 4 disk diameters around it.—*J. Ringland Anderson.*

(Knowledge of this condition seems to be expanding rapidly. The fact that it may appear long after birth and that there are nervous system manifestations in some instances, is significant.—J. N. E.)

Intra-Mural New Vessels in an Occluded Retinal Vein. A Clinical Description. *I. C. Michaelson, Glasgow, Scotland.* Brit. J. Ophth. 32:164-66, March 1948.

A 60 year old female suffered an obstruction of a branch of the superior temporal vein, left eye. Five months later numerous collateral vessels had developed. The more unusual development occurred in the ascending portion of the obstructed branch. On either side of the blood column a pale white sheathing is seen representing the vessel wall. Where the blood column is interrupted there are two very fine vessels visible within the wall of the vein on each side of the lumen. The appearance of such intramural vessels has been described by Loewenstein. 1 reference. 1 figure.—*R. T. Snip.*

(The studies of this group of workers are adding much to our knowledge of retinal vessels in health and disease.—J. N. E.)

The Retinal Arterial Bloodpressure in Pregnancy-Toxicosis (*A szemfeneki vernyomas ertekelese a terhessegi mergezesek kapcsan*). *S. Eross and G. Tarjan, Budapest, Hungary.* Orvosi Hetilap 89:406-10, September 1948.

The diastolic blood pressure of retinal arteries and its reaction to the diastolic pressure of the brachialis, in 41 pregnant women suffering from nephropathia or circulatory disturbance was determined. Discordant values between the two diastolic pressures were found in 29 cases: 3 of these 13

developed eclampsia, 3 intrauterine death of fetus; equally discordant values were found in myodegeneration, heart failure and syphilis. Concordant values were observed in 2 pregnant women suffering from essential hypertonia. In healthy pregnant women (50) discordant values could not be demonstrated. Thus in presence of discordant values complications may be expected (symptom of warning). The nephropathia never showed further deterioration in case of parallel rise of pressures. 1 table. 2 figures.—*S. de Grosz.*

16a. Color Vision

The Visual Functions of the Complete Colorblind. *Selig Hecht, Simon Shlaer, Emil L. Smith. Charles Haig and James C. Peskin, Columbia University, New York, N. Y.* J. Gen. Physiol. 31:459-72, July 20, 1948.

Normal visual functions and those of a completely colorblind individual are compared. Measurements of spectral brightness distribution were made with the Helmholtz color mixer, a 3 degree field being used because the colorblind subject could make more consistent brightness comparisons with the larger field. The spectral sensibility distribution of the subject had a maximum of 520 mu at all brightnesses, corresponding to rod vision at dim illuminations. The standard scotoptic visibility curve and that of the subject almost exactly coincided over the long wavelength portions but deviated somewhat on the shortwave side, indicating that the retinal elements of the colorblind correspond rather well with normal rods but not with cones. Measurements of dark adaptation made centrally and peripherally at the retina showed it to be a single continuous function of the fast type under all circumstances and corresponding to the normal for low light adaptation. The visual acuity curve for the completely colorblind eye was single and corresponded to rod function in the normal eye. Measurements of the critical fusion frequency and intensity for different spectral regions for the normal eye showed two systems for the colorblind eye, one functioning at low and the other at high intensities with a sharp translation from one to the other though they both have visual purple as sensitive material. This is explained by different concentrations of visual purple for the two systems. Rods with the visual purple concentration are sensitive to the lowest intensities as in normal eyes. Rods with much lower concentrations of visual purple function at the higher intensities because the required intensity varies inversely to the concentration of photosensitive material. The intensity discrimination of the colorblind then, covers practically the same range as the normal eye. The maximum critical fusion frequency however is only about 20 cycles per second for the colorblind as compared with 55 cycles in the normal eye. These two systems in the colorblind eye have the same spectral sensitivity of rod vision as their relative intensity positions are not affected by using different parts of the spectrum. 19 references. 4 tables, 9 figures.

Mass-Testing of Color Vision. A Simplified and Accelerated Technique. *Elsie Murray, Cornell University, Ithaca, N. Y.* Am. J. Psychol. 61:370-85, July 1948.

Copies of the fifth edition of Ishihara plates were used to test color vision of large groups of students. The 3 hidden-pathway plates for illiterates were discarded, leaving 12 (plus the malingerer's card). The eighth edition of Ishihara was also used. The diagnosis color-blind was avoided, and the terms color-deficient, color-deviate and color-different (CD) were used. The plates were arranged in random order and were exposed two seconds each at about 30 inches and at a slant allowing the line of sight to strike at a 90 degree angle. Illumination was 20 to 40 f.c. using standard daylite roundels. Of 1,866 men tested, 144 scored 3-12 errors. Of 468 women, 11 were scored CD on the 3-12 errors basis. The percentage of color-deficient women is not as great as that of men. In the red and purple duplex digit plates (No. 12 and 13 in the fifth edition), failure to read the red digit on its grey ground occurred in all of 3 women failing on 4-12 plates, an unusual finding. In the men, the responses on these plates helped bring out 31 scoterytherous out of 113 cases (28 per cent), if graying out of the red digit is a sign of shortening of the spectrum in the red. The 3 women scoring 11-12 errors all miss the red digit in the diagnostic plate. On the B-G double digit reversible or convertible plate (No. 5 in the original series), the assumption that women especially misread it was not borne out by the data. Hidden digit plates gave doubtful results. Certain apparently normal cases see the figure on one of the two plates in the fifth edition almost as clearly as the color-deficient do. Many examiners thus avoid this pattern. In the present series, 22 per cent of normal males and 14 per cent of normal females found the hidden "2." It is suggested that any institution interested in the future of its students will find it profitable to run a color test along with its medical examination of entrants. Scoring should not stigmatize the student but guide him in his chosen vocation. 32 references. 1 table.

(*The routine testing for color blindness is definitely indicated in health reviews as well as in ophthalmologic examinations for definite indications. On one occasion the patient described in detail the colored halos of glaucoma. He was red-green blind and his description was derived entirely from his study of popular literature on glaucoma.*—J. N. E.)

16b. Light Sense (Night Vision)

See Contents for Related Articles

17. Neuro-Ophthalmology, Optic Nerve, Visual Pathways, Centers and Visual Fields

Atrophy of the Optic Nerve Due to Malnutrition. Report of Two Cases. *Rolf Eissler, San Francisco, Calif.* Arch. Ophth. 39:465-70, April 1948.

A review of the literature indicates that atrophy of the optic nerve from malnutrition is very rare. This paper suggests it may be commoner than has been thought. Thiamine and riboflavin deficiencies in the diet, the latter probably affecting the central nervous system, are the suspected etiologic agents. Two cases are presented with detailed histories and outlines of studies made.—*M. I. Henrich.*

(*Partial or total atrophy of the optic nerve are the most consistent abnormalities of the fundus in nutritional amblyopia. But there is considerable difference of opinion as to macular changes.*—A. B. R.)

Abducens Nerve Palsy Following Spinal Anesthesia. A Case Report. *William M. Parke, Jr., Grasslands Hospital, Valhalla, N. Y.* Anesthesisiology 9:440-41, July 1948.

A 66 year old male was admitted for a transurethral resection because of benign hypertrophy of the prostate. Twenty years previously he had had miners' nystagmus which had disappeared. The Wassermann reaction was negative. He was given nembutal preoperatively. Ephedrine sulfate, 25 mg., was given subcutaneously, a spinal puncture was made and procaine hydrochloride, 120 mg., was administered. The transurethral resection was done, with no postoperative disturbances. About a week later the patient was given nembutal, 0.1 Gm. and, one hour later, morphine, 4 mg., and scopolamine, 0.2 mg. A spinal puncture was made; pontocaine, 8 mg. and dextrose, 80 mg. (10 per cent), mixed with 1.4 cc. of spinal fluid were given. Perineal prostatectomy was completed in about two and one-half hours. During the procedure the patient received 500 cc. of blood and 750 cc. of physiologic saline. The patient had been in a Trendelenburg position. On the first postoperative day the patient complained of blurred vision and difficulty in reading. There was mild photophobia. On the third day he had a frontal headache which was relieved by emesis of undigested food. On the tenth day the patient noted double vision on turning to the right. Examination showed partial paresis of the right external rectus muscle. There was binocular diplopia in the field of the right external rectus, indicating abducens involvement. Five weeks after operation, the diplopia disappeared.

(*Paresis of ocular muscles, especially of the abducens, is not infrequent. It is probably caused by an intracerebral hemorrhage and not by the anesthetic as it may also appear after a simple spinal tap. As the paresis usually develops eight days afterwards, it may be caused in this case by the first operation.*—A. B. R.)

The Frequency of Syphilitic Primary Optic Atrophy in Dementia Paralytica. A Clinico-Anatomic Study. *Walter L. Bruetsch, Indiana University School of Medicine, Bloomington, Ind.* Am. J. Psychiat. 104:725-29, May 1948.

Complete syphilitic optic atrophy in dementia paralytica, including taboparalysis, has been observed in 2 per cent of 1,000 cases. Incipient and intermediate stages of optic atrophy are much more frequent and have been found in 62.5 per cent, on histologic examination of the optic pathways of 32 general paralytic patients. There is no convincing evidence that syphilitic primary optic atrophy occurs with so much greater frequency in taboparalysis than in general paralysis, as has been reported in the literature. Until recently it was the general rule that syphilitic patients with optic atrophy as the only neurologic symptom were diagnosed as tabes dorsalis on the erroneous assumption that primary syphilitic optic atrophy constituted evidence of tabes. If the criteria for the diagnosis of tabes and taboparalysis were uniform and more accurate, much of the alleged higher frequency of optic atrophy in these two types of neurosyphilis would likely disappear. 13 references. 3 tables. 2 figures.

18. Eyeballs, Exophthalmos and Enophthalmos

Exophthalmos and Thiouracil Therapy. *William H. Beierwaltes, University of Michigan, Ann Arbor, Mich.* Arch. Int. Med. 81:364-68, March 1948.

Results of treatment of 28 patients with thyrotoxicosis but not malignant exophthalmos with thiourea derivatives are presented. These cases showed no significant average increase in exophthalmos over a four month period in contrast to 11 similar patients reported by Dobyns, 7 of whom showed an increase of 1.5 mm. or more. An increase of exophthalmos was reported in 50 to 60 per cent of patients after thyroidectomy. Some patients with malignant exophthalmos were apparently included, and it is possible that their elimination was responsible for some of the difference between these statistics. An increase of exophthalmos occurred in 20 per cent of cases of thyrotoxicosis treated by roentgenotherapy. On the other hand, 4 patients having a low metabolic rate and malignant exophthalmos who were treated with Lugol's solution and dessicated thyroid showed no increase in exophthalmos in 13.5 months. 4 references. 1 figure.

Exophthalmos Due to Infantile Scurvy. *O. B. Richardson.* Bull Acad. Med. Toronto, 22:51, December 1948.

An 8 month old boy suddenly developed proptosis of the right eye. One week later tenderness of the legs was noted. The diet was deficient in vitamin C. The right eye was proptosed 5 mm. downwards and laterally. The orbit was resistant; there was no pulsation. The gums, ribs, knees and long bones showed characteristic changes. The blood ascorbic acid was nil. He was given 2 ounces of orange juice and 200 mg. ascorbic acid daily. Within three weeks the exophthalmos has disappeared. 4 references.—*C. McCulloch.*

19. Glaucoma and Hypotony

Glaucoma As Post Operative Complication of Hysterectomy, Oophorectomy, Enterectomy and Enteroenterostomy. *John A. McCreery and Robert J. Hansell, Greenwich, Conn.* Connecticut M. J. 12:620-21, July 1948.

A case of glaucoma in a 61 year old white female is discussed. The chief complaint was swelling of the abdomen. At operation a solid tumor of the ovary was removed. A hysterectomy and an end to end enteroenterostomy were done. Five days later the patient complained of pain over the right eye. The diagnosis was glaucoma, acute, right eye. The eye was treated with 2 per cent eserine, one drop every minute, for five minutes every hour. Intravenous injections of 100 cc. of 50 per cent glucose in saline were given as necessary. The tension in the eye reduced from 50 + to 19 and the eye was free from pain but tension rose in the left eye to 60, Schiotz method. The left eye was then treated the same as the right, with successful results. The patient also had abduction paralysis of the right vocal cord, of unknown cause. Tea and coffee were eliminated from her diet and 20 mg. of rutin were given daily. It was found that a 1:1,000 epinephrine pack would temporarily reduce the tension in each eye to 19. Because of sensitization, eserine was discontinued. Treatment was changed to pilocarpine, 1 per cent in the right eye, three times a day and in the left eye once a day. The tension remained at 35 to 10, Schiotz, in the right eye. Corneosclerectomy was done and produced good control of the tension in the right eye.

Syndrome of Unilateral Recurrent Attacks of Glaucoma with Cyclitic Symptoms. *Adolph Posner and Abraham Schlossman, New York, N. Y.* Arch. Ophth. 39:517-35, April 1948.

Nine cases are presented which demonstrate a syndrome of increased ocular tension associated with cyclitis. The features of the syndrome are: (1) It is unilateral. In 3 cases there was some degree of heterochromia and in each case the lighter eye was involved. In 3 cases anisocoria was present: (2) The presenting symptom is usually slight discomfort, colored halos or blurring of vision: (3) The eye is white or only slightly injected: (4) Ocular hypertension may appear a day or so before or simultaneously with cells in the aqueous. Posterior keratic precipitates follow: (5) Angles were open in 4 cases studied gonioscopically: (6) Attacks last usually about two weeks: (7) Episodes occur with varying frequency and with no apparent cause: (8) Treatment does not seem to shorten the course of the attack. The importance of the recognition of this syndrome lies in its forming a link between primary and secondary glaucomas, since it cannot be classified in either category. A few authors have mentioned such a syndrome in the literature. A tentative hypothesis is advanced which relates this syndrome

to a disturbance of the central and the peripheral autonomic nervous system. Treatment should be confined to low concentrations of pilocarpine hydrochloride. A classification of glaucoma associated with iridocylitis is presented. 9 references.—*M. I. Henrich.*

20. Lacrimal Apparatus

Paroxysmal Lacrimation (Syndrome of Crocodile Tears) and Its Surgical Treatment. Relation to Auriculotemporal Syndrome. *Francis C. Boyer and W. James Gardner, Cleveland Clinic, Cleveland, O.* Arch. Neurol. & Psychiat. 61:56-64, January 1949.

Paroxysmal lacrimation involves unilateral tearing during eating. It occurs most often as a sequel of facial nerve palsy and the syndrome does not develop until the motor paralysis has disappeared. The theory is supported by 3 case histories that the phenomenon is caused by misdirection of regenerating nerve fibers, and a surgical treatment is described. The syndrome is rare. In case 1, crocodile tears occurred as a sequel of facial palsy resulting from surgical trauma to the intracranial part of the facial nerve. Relief was obtained by resection of the greater superficial petrosal nerve. In cases 2 and 3, there had been surgical trauma to the greater and lesser superficial petrosal nerves; relief followed resection of the glossopharyngeal nerve. As the lesser and greater suprficial petrosal nerves emerge from the petrous temporal bone, they traverse the middle fossa close together until the lesser nerve leaves through the foramen ovale. If both these preganglionic parasympathetic nerves are divided, as was done in cases 2 and 3, probably on regeneration some secretory fibers in the lesser superficial petrosal nerve for the parotid gland found their way into the distal segment of the greater superficial petrosal nerve, forming connections with the lacrimal gland. Thus a gustatory stimulus evoked lacrimation in cases 2 and 3. The theory was confirmed, since division of the ninth nerve, which carries salivary but no lacrimal efferent fibers, eliminated tearing in both cases. Redividing the greater superficial petrosal nerve would have arrested tearing in cases 2 and 3, as it did in case 1, but this might have been followed by a similar misdirection of the regenerating fibers. If the ninth nerve was divided in the posterior fossa, tearing would not recur. The auriculotemporal syndrome is similar to paroxysmal lacrimation in that both are caused by misdirecting of regenerating autonomic fibers. In the former, when the patient eats, the parotid skin becomes erythematous and sweat droplets form upon it. A lesion of the auriculotemporal nerve distal to where it receives autonomic fibers from the otic ganglion can result in misdirecting of regenerating parasympathetic fibers; such fibers, which originally supplied the parotid gland, form connections with the arterioles of the skin and sweat glands. 17 references. 2 figures.

Sjogren's Disease, with Dryness of the Bronchial Mucosa and Uncertain Lung Lesion. *Philip Ellman, Dorking County Hospital, and F. Parkes Weber, German Hospital.* Brit. M. J. 4598:304-305, Feb. 19, 1949.

A case of what seemed Sjorgren's disease is reported in a 34 year old woman. Her previous history was irrelevant. She had dryness of the throat, eyes and mouth, and an irritable dry cough increased by talking. A painless, cherry-sized swelling could be felt below and to the right center of the tongue. There was slight symmetric thyroid enlargement. The lungs showed diminished aeration at both bases, tubular breath sounds at the left base, and dry crepitant rales in both lungs. Roentgenograms showed pleural involvement, decreased translucency, a consolidated area in the left lower lobe and scattered opacities in the right lower lobe. Treatment was symptomatic to relieve the dry eyes, mouth and bronchial mucosa and increase salivary excretion. Cod liver oil drops relieved the eyes. Mecholine, pilocarpine, physostigmine and a steam tent for two weeks were ineffective in relieving bronchial dryness. Deep roentgenotherapy caused the main salivary gland swellings to disappear but mouth and subconjunctival dryness increased and a swelling developed in the right sublingual region. Further treatment beyond inhalation treatment is problematic but it is believed that the lacrimal ducts should be closed by diathermy to relieve conjunctival dryness. A negative liver biopsy indicated that the lung condition was not sarcoid. 6 references.

Dacryocystitis of Infancy. A Review of One Hundred Cases. *J. V. Cassady, South Bend, Ind.* Arch. Ophth. 39:491-507, April 1948.

The conservative treatment of dacryocystitis of infancy may at times be more harmful than early probing of the duct. The literature since 1904 is reviewed. This study of 100 cases has led to the conclusion that congenital atresia of the lacrimal duct is the usual cause of the condition and should be corrected as soon as possible. The large majority of cases was seen before the age of 3 months. Probing was done on the first visit, usually without anesthesia. Penicillin solution was used at home between visits. After probing symptoms disappeared within a few days in 67 cases and within a week in an additional 10 cases. On subsequent visits if pus was still present, irrigation and probing were repeated. 68 references. 1 table.—*M. I. Henrich.*

21. Eyelids

The Eyelid and Socket Surgery. *Fulton Risdon, Toronto, Ont., Canada.* Plastic & Reconstruct. Surg. 3:454-55, July 1948.

Eyelid restoration is done by full thickness grafts or partial thickness skin grafts. The former is generally used for the lower eyelid and the latter for the upper. The same, namely 0.018 inches thick of skin, may be

used for both eyelids. Usually only one lid is reconstructed but when the four lids need skin grafts, the upper lids are done first. A raw area is produced in the eyelid, larger than needed, and the graft sewed in place. A shaped piece of lead plate of moderately light gage, beneath which is a piece of lint, is laid above the graft, extending 1.5 mm. beyond it on all margins. The sutures are tied over the lead plate, which is larger than the graft, thus producing uniform pressure, and the lead bends to the shape of the eyelid. The plate is left in place for ten days to two weeks. To reconstruct an enucleated socket, the remaining mucous membrane could not be removed but the socket should be extended in the upper and lower fornix and the inner and outer canthi. The raw surfaces caused by the extension are covered by a skin graft 0.018 thickness. A mold of dental compound may be used, often made in two pieces to give greater depth. Enough time must be given for softening and absorption of scar tissue in the entire socket. The artificial socket does not permit much stretching. If stretching is necessitated because of contraction, a further skin graft is needed before introducing a permanent artificial eye. Restoration of the enucleated socket is satisfactory if the surgeon will give personal attention to the new socket for one month to six weeks before referring the case for a prosthesis. The delay lets the graft mature and permits normal contraction to occur over the mold. Although the plastic artificial eye is in common use, the plastic material is not hard enough and glass is the substance of preference for artificial eyes. The after-care of the reconstructed socket is similar to that of any bodily area. It should be cleaned with soap and water, dried fully, and a thin film of ophthalmic ointment spread over the socket before inserting the artificial eye. Any hairs should be removed. The best method to correct ptosis is suspension of the upper eyelids to the occipitofrontalis muscle by narrow strips of fascia lata. The fascia is passed down near the inner canthus and above the tarsal cartilage to the center of the eyelid, then up to its original position in the eyebrow. This is repeated in the external region of the eyelid and eyebrow, and the ptosis overcorrected by producing tension on the fascial strips.

Severe Lid Deformities. Principles of Repair. *Alston Callahan, Thigpen-Cater Eye Hospital, Birmingham, Ala.* Plast. & Reconstruct. Surg. 3:456-63, July 1948.

The management of bilateral multiple lid deformities is illustrated with a detailed case report. Loss of skin is replaced with a free skin graft and displaced tissues are rearranged with a pedicle flap. Intermarginal lid adhesions are utilized to prevent contraction. When extensive repair of the lid is required after the eye has been removed, the graft or flap is kept under more adequate tension if an acrylic conformer is kept constantly in the socket. This ophthalmopedic also maintains ample space for an artificial

eye when surgery is concluded. Intermarginal lid adhesions are divided after three months. A severed palpebral ligament of the upper lid of the other eye is re-attached to the bone with wire. 11 figures.—*Author's Abstract.*

Crescentic Deformities of the Lid Margin. *Sidney A. Fox, New York, N. Y.* Arch. Ophth. 39:542-44. April 1948.

A technic for repair of crescentic lid deformities is described. It was used with good results in 14 cases. It consists of splitting both lids into a skin-muscle and a tarsoconjunctival layer and sewing together the two tarsoconjunctival edges. Then a graft is cut from the lower part of the eyebrow and sewed in place over the defect. This method precludes two operations and produces less scar tissue than does the technic employing two operations. 1 reference. 2 figures.—*M. I. Henrich.*

Hereditary, Familial and Acquired Ptosis of Late Onset. *R. Amyot.* Canad. M. A. J. 59:434-38, November 1948.

Nine cases of bilateral ptosis which developed between the ages of 53 and 64 are reported. In each instance there was a history of a similar condition in other members of the family. Four patients complained of difficulty in swallowing. In 4 there was some evidence of weakness of other extraocular muscles. Aside from this the neurologic examinations were essentially negative. The defect appears as a dominant hereditary character not related to sex. The author suggests that hereditary ptosis of late onset is due to myopathy of the levator of the eyelid. 15 references.—*C. McCulloch.*

22. Orbit

See Contents for Related Articles

23. Allergy

Some New Concepts Concerning Ocular Complications Following Vaccination. *E. Rosen, Newark, N. J.* Ophthalmologica 115:321-32. June 1948.

In the spring of 1947 mass vaccination (6,000,000) of New York City population was carried out. Shortly afterwards the author came in contact with some 50 cases of ocular complications similar to postvaccinial encephalitis. The reactions were observed either immediately following vaccination or with a delay of nine to thirteen days, which is the incubation period for the above encephalitis. The response manifested itself in a variety of symptoms: interstitial keratitis associated with vestibular-auditory

symptoms; metaherpetic or dendritic forms of keratitis, exudative chorioretinitis and retinopathy in the central area accompanied by serous exudates; thrombophlebitis, panophthalmitis, lesions in the extraocular muscles, etc. In 1 case the central retinal artery, and in another the central retinal vein, were thrombosed. Comparison of the above cases with literature reports leads to the conclusion that vaccination causes in some subjects an allergic condition affecting the brain, with responses located chiefly in the eyes, in the cranial nerves such as the sixth or in the extraocular muscles. The mechanism of these disturbances involves overstimulation of the sympathetic nerve centers, as a result of allergy to the vaccine, hence the primary effect is localized in the cortex of the brain. The resulting vasoconstriction affects the blood vessels in the area of the optic nerve. This may account for the involvement of the macula, since in that portion of the retina the nerve endings are clearly seen to be affected. The obstruction of the central retinal artery, and vein, reported above, likewise confirm this hypothesis. A further, indirect, confirmation is offered by cases where a similar condition has resulted from emotional tension, with involvement of the sympathetic nervous system and consequent spasm of the smaller blood vessels in the eye. Thus, Zelig reports an edema in the macula following an emotional upset (*Psychosom. Med.* 9:110, 1947). The author comes to the conclusion that indiscriminate mass vaccination may lead to definite harm from the ophthalmologist's point of view. The latter is best fitted to judge the seriousness of complications following administration of vaccines, therapeutic serums, other types of protein therapy, etc., since what is going on in the eye is but a reflection of the impairment of the nerve centers in the brain cortex. The possibility of such complications must be always kept in mind when foreign protein of any kind are to be injected into the system. Hence, mass vaccination of the type performed in New York must definitely be objected to. 30 references.

24. Anesthesia

See Contents for Related Articles

25. Aviation and Military Ophthalmology

Aircraft Landings Without Binocular Clues. A Study Based upon Observations Made in Flight. *Carl Pfaffmann, Brown University, Providence, R. I.* Am. J. Psychol. 61:323-34, July 1948.

Experienced naval flight instructors carried out a series of landings while wearing a type of eyeglass which occluded the binocular stereoscopic fields but left the total extent of the visual field relatively unaffected. This result was produced by occluding the nasal lens surfaces of standard goggles used by aviators. The effect of occlusion upon control of the aircraft in

landing was investigated. The flight instructors and also one inexperienced observer made simple landings and they also did a series of precision landing maneuvers. The elimination of all binocular vision clues caused the subjects to fly closer to the field during a circuit and to approach and level off too high while landing. The accuracy of control also was decreased during precision landings. The most general effect during circuit of the field at 500 to 800 feet was the reduction in the apparent size of objects on the ground surrounding the airfield. Reports that the field seemed farther away may be secondary. This impression may have been caused by a change in apparent size. It is suggested that the tendency to level off too high might be caused by a reduction in size-constancy. With the blinders, size increases more rapidly, so that the pilot anticipates the leveling off point, or levels off too high. It is concluded that binocular clues are normally used by experienced pilots in perceiving altitudes at 500 to 800 feet, as well as in perceiving distance and depth in the final stages of leveling off and landing. 7 references. 1 table. 5 figures.

Persisting Ocular Defects in Pacific War Prisoners. *Everett J. Olenick (Comdr., M.C., U.S.N.), U. S. Naval Hospital, Great Lakes, Ill.* U. S. Nav. M. Bull. 48:538-46. July-Aug. 1948.

Among 26 naval and marine repatriates who survived three years of Japanese imprisonment with sequellae of persisting visual loss, examination performed six months to one year following their release showed 19 (73 per cent) to be affected with bilateral optic nerve atrophy. Of the remaining 7 cases 3 had correctible refractive errors and 4 had uniocular pathology of incidental or accidental nature. The optic atrophy patients showed severe irreversible visual depression (acuity ranging from 2/100 to 14/20) with negligible improvement from repeated refractions. These cases were characterized in addition by pallor and blurring of the optic disks, concentric constriction of the peripheral visual fields and the occurrence of paracentral scotomata in the central visual fields. Color fields were not out of normal proportion. The nerve atrophy appeared to be postneuritic in nature, a result of vitamin B deprivation which was probably intensified by the utilization of B reserves required to support metabolism of the exclusively carbohydrate diet. The deficiency was probably accentuated by the excessively arduous labor program as indicated by the absence of cases among officers who, though sharing identical diets with the enlisted personnel, were excused from work details. Examination was repeated a year later in 3 cases of optic atrophy and after a second year in 1 of these, but, although subjective improvement was claimed, acuity, ophthalmoscopic findings and field defects remain exactly as before. Of the 4 cases of uniocular (non-atrophic) pathology, 3 presented postulcerative corneal opacities while of the 19 cases of nerve atrophy, only 2 had had corneal ulceration. A high variability of individual susceptibility to starvation neuritis was apparent

and physically small men seemed relatively better able to withstand the hardships of imprisonment. The permanent and crippling effects of optic atrophy were believed readily preventible. 6 references. 2 tables. 2 figures.—*Author's abstract.*

Experiences in Night Vision in the Royal Air Force. *P. C. Livingstone* (*Air Commodore, R. A. F.*). Trans. Ophth. Soc., Australia 6:44, 1946.

The author's investigations in Iraq in 1932 promoted interest in scotopic vision. Though the authorities were not anxious for an extra visual standard that might cause rejections amongst applicants, yet the following features could not be overlooked; (1) personnel differed in threshold discrimination; (2) the power to synthesize form varied. As research continued and the rotating hexagon developed, it seemed that in form appreciation lay the correct approach. Certain faults in the hexagon were gradually removed. Accurate calibration was not possible until 1943. Seventy per cent of the hexagon test was carried out under conditions closely allied to various phases of moonlight. During 1940 to 1942 night operations could be undertaken with greatest accuracy during moonlight. Nearly 220,000 personnel were tested in 1940 to 1945. Routine testing was done by orthoptists. It was found that intelligence or the ability to undertake advanced academic tasks did not influence hexagon scores as much as that animal instinct in men that could be roused by danger. Scotometry, with test objects treated with radium sulfide paint of differing brightness, was developed. A close relationship was found between hexagon scores and fields plotted by rod scotometry. Once the screen and targets had been standardized efforts were made to find the average scotopic field. Goggles of 4 per cent transmission were worn for forty-five minutes and after ten minutes in complete darkness the test was begun. One eye was tested at a time. The blind spot was found to be larger than in daylight. The roots and main branches of the retinal vessels could be plotted. A more or less circular absolute central scotoma was found in all fields. A hypersensitive area could be plotted, 12 to 15 degrees from fixation, that correspond with the zone of increased rod concentration. (Osterberg). In 10 per cent a band of relative insensitivity was found above fixation which was probably related to a defective closure of the secondary optic vesicle. It was possible to correlate the screen defect with blood vitamin A content amongst a group of volunteers. In long standing diabetes, treated or untreated, islets of defect were found which may be the result of a nutritional failure, where fine fatty changes in the vessel walls narrow or occlude the lumen. The author reported the results of training to increase visual perception, particularly at dusk and in moonlight. As the value of such practice became known each command developed the form of night vision training most suited to its need. Eventually there were twenty-three centers in Bomber Command alone. They provided a strong spirit of competition and when defects were revealed the men were referred for a full visual overhaul. The shadowgraph

and Evelyn's training system were praised. The author considered that men employed 60 per cent of their available capacity to see and to identify and wandered about the world psychologically part-blind. In discussion the author referred to the use by the German Air Force of injections of an extract of marigold. After a course lasting weeks starlight became as moonlight, or so it was claimed. The Institute of Aviation Medicine was investigating this matter. The Japanese experimented with shark's pituitary gland. This summary of the history of night vision testing and training is excellently illustrated.—*J. Ringland Anderson.*

(*The rotating hexagon was an important milestone in the evolution of the knowledge of night vision testing in aviation. Certain defects could not be eradicated. It was difficult to eliminate positive and negative malingering. Its greatest defect was one of method, in that the testee came to the examination in most cases with no facility with extra foveal fixation, so necessary in night vision efficiency. Also, no data has been presented to show that the hexagon findings correlate with actual night vision performance in the field. Rod scotometry is a definite contribution but largely academic. The author's finding of correlation between the test results and serum vitamin A is interesting, though one cannot help but feel that it must have been a fortunate accident, since tissue vitamin A content is not necessarily indicated by the serum level.*—J. V. V. N.)

26. Medical Opthalmology

Ophthalmology in Relation to General Medicine — Some Aspects. *A. Chandramouli, L.M.S., B.S.C., L.O. Conjeevaram, India.* Antiseptic, Madras. 45:433-48, July 1948.

Ophthalmology is of practical importance to general medicine because the ophthalmologist is frequently the first doctor to diagnose a systemic disease by an ophthalmic symptom. Subconjunctival hemorrhage may lead to the discovery of scurvy or infective endocarditis. Ocular palsy may indicate disseminated sclerosis. Inequality of the pupils, if not of local origin, indicates disease of the central nervous system. A blue sclera indicates disturbed calcium metabolism. Interstitial keratitis is often the only evidence of congenital syphilis: Edematous eyelids may indicate renal disease, and ocular muscles often point to myasthenia gravis. The eye and the heart show marked similarity in drug reactions. Eye strain or failing accommodation may indicate diabetes, renal or intestinal disease. Retinal pulsation is seen in aortic regurgitation and spasm in retinal vessels may indicate general hypertension or Bright's disease. The conjunctiva is a favorite site for allergic manifestations and the eye gives many indications of diabetes. Acute kerato-conjunctivitis is a common symptom of acute infectious disease. Optic atrophy may be a sequel to alimentary

hemorrhages while iritis, iridocyclitis and optic atrophy are all late complications of bacillary dysentery. Ocular disturbances may indicate pituitary, thyroid and parathyroid afflictions while progressive failure of accommodation indicates thiamin deficiency. 1 table.

Ophthalmoscopic Observations in Hypertension and Their Import. *Shaler Richardson, Jacksonville, Fla.* J. Florida M. A. 35:79-84, August 1948.

Generalized narrowing and local constriction of retinal arterioles may be caused by spasm but usually indicates an increased general blood pressure and is the first ophthalmoscopic finding in many hypertensive states. Arteriolar sclerosis follows, being first indicated by a widening of the light reflex and afterwards by beading or irregularity of the lumen. The arterioles become narrowed and the arteriovenous ratio is changed from 2:3 to 1:3 or more. The chief features of the classification of hypertensive retinal lesions by the American Ophthalmological Society are reviewed. Ophthalmologists and physicians generally should sufficiently familiarize themselves with this to make it of practical value to them.

Careful estimation of the amount of retinal sclerotic changes is important in evaluating the suitability of a hypertensive patient for surgery, good results being obtained in 9 per cent of patients with pronounced retinal arteriosclerosis as compared with 40 per cent in patients without. These retinal changes are also valuable in cases of pregnancy complicated by hypertension and often help differentiate the type of toxemia present. Focal constriction of retinal arterioles is an outstanding early change in preeclampsia and eclampsia. 12 references.

27. Medicine, Surgery and the Sciences

Certain Factors Influencing the Pressure of Cerebrospinal Fluid in Remote Results of Concealed Cranial Traumas. Preliminary Communication (*Davlenie spinnomozgovoi zhidkosti pri otdalennykh posledstviyakh zakrytykh travm cherepa i vlyanie na nego nekotorykh faktorov*). *G.Ya. Liberzon and I. I. Matovetskii, The Central Red Army Sanitarium, Feodosiya, U.S.S.R.* Nevropat. i psikhiat. 16:42-43, No. 4, 1947.

Among 30 injured patients the intracranial pressure was normal (below 80 mm.) only in 2 cases. In 6 cases it ranged 80 to 90 mm., in 13 cases 100 to 150 mm. and in 9 cases over 150 mm. In the last group 2 patients had a very high pressure of 210 mm., and in 1 case 220 mm. was reached. The posttraumal period lasted from several months to several years, and the severity of condition varied with individual patients. This chronic rise of intracranial pressure is believed by the authors to be the cause of the neurologic symptoms as well as subjective complaints.

Blocking of the passages carrying the cerebrospinal fluid was tested next. The Queckenstedt, Stukey and Emdin-Harkavi methods were intercompared. The first test gave the most accurate results. Obstruction of the passages could not be demonstrated. The measurements disclosed sharp fluctuations of the cerebrospinal fluid and consequently of the intracranial pressure. These variations, in the authors' opinion, produce an unfavorable effect on the activity of the cerebrum, and especially upon the regions bordering on the ventricles.

Loud talk, coughing, etc., were found to raise the pressure up to 150 mm. Subjectively headaches, sensation of pressure in the skull, etc., were experienced during such exertion.

The authors refer to the above condition as intracranial distention, and regard it as one of the basic causes of posttraumal complaints. It appears to be more pathogenic than moderate pressure increase of the cerebrospinal fluid.

The rise in the intracranial pressure is caused by: (a) discrepancy between the rate of formation and absorption of the cerebro-spinal fluid (abnormal flow); (b) impaired venous and arterial circulation in the skull. The impairment evidently results from the trauma and persists through the posttraumal period.

The Inhibition of Hyaluronidase by Sodium Salicylate and its Possible Metabolites. *Julius Lowenthal and Arthur Gagnon, University of Montreal. Quebec, Canada.* Canad. J. Research. 26:200-5. Sect. E. June 1948.

It has been demonstrated that extracts or spreading factors from various sources such as hemolytic streptococci Group A, snake venoms, poisonous insects, etc. increase dermal permeability. Hyaluronidase, an enzyme having a specific action on hyaluronic acid, a mucopolysachride, was isolated from these spreading factors. This is found in the skin, synovial fluid and other places, and forms an essential constituent of connective tissue. Action of the enzyme on its substrate first produces a depolymerization and hydrolysis. Rheumatic fever is frequently preceded by streptococcal throat infections, from which organisms hyaluronidase has been extracted, and develops in areas rich in hyaluronic acid.

It is generally agreed that rheumatic fever is not caused by any bacterial agent. It was also demonstrated that the intravenous injection of sodium salicylate inhibited the spread of hyaluronidase injected in the skin. Experiments were therefore made to reproduce this inhibition in vitro in effort to obtain more knowledge of the action of salicylates in rheumatic fever. It was found that carboxy-p-benzoquinone inhibited hyaluronidase in vitro but no definite conclusions could be drawn concerning the possibility of a corresponding mechanism in vivo because of different conditions. Furthermore, while possible, it has not yet been demonstrated that carboxy-p-

benzoquinone is formed in the body after administration of salicylic acid. The experimental arrangement of the viscosimetric measurement causes difficulty in arriving at any definite conclusions as to whether the observed effect results from a specific inhibition of the enzyme, or an unspecific denaturation. The low quinone concentration makes this unlikely. Further experimental evidence is necessary to correlate these findings with the actual action of salicylates in rheumatic fever. 24 references. 1 table. 1 figure.

Myasthenia Gravis, Brief Notes Regarding Diagnosis and Treatment. *F. B. Walsh, Canad. M. Assoc.* C. M. A. J. 60:17-26, Jan. 1949.

The discussion in this paper is based on observations of 125 cases. In the series of 125 cases, 57% occurred in females, 17% in negroes. The ages ranged from 3 to 75 years; most cases were in the third decade. In children ophthalmoplegia was a prominent sign.

A history of remissions and recurrences is helpful in the diagnosis. External ophthalmoplegia and weakness of the facial muscles are the most frequent early signs. An exacerbation of the disease frequently accompanies an upper respiratory infection. A remission usually occurs during the second and third trimester of pregnancy. Myasthenia gravis is sometimes associated with hyperthyroidism. With neostigmine therapy there is less chance of remission than when no therapy is given.

Neostigmine 1.5 mgm. combined with 0.6 mgm. atropine, given intramuscularly, is used as a therapeutic test. The levator palpebrae responds more readily than do the muscles attached to the globe. The patient feels stronger, swallowing is improved, there are no muscle fasciculations, and rarely side reaction. The findings should be reproduceable. Occasionally, obvious cases of myasthenia do not respond to neostigmine.

Enough neostigmine should be given by mouth to maintain the patient adequately and every effort should be made to carry the patient through relapses, giving neostigmine intramuscularly, or intravenously if necessary. Neostigmine therapy usually does not cure diplopia. Results from thymectomy are variable, and in the presence of thymona thymectomy may be contraindicated. 4 figures. 13 references.—*C. McCulloch, M.D.*

28. Pharmacology, Toxicology and Therapeutics

Sensory and Neural Complications in Intermittent Cosmopolitan Fever (*A propos des complications sensorielles et nerveuses de la fièvre récurrente cosmopolite*). *J. Ferrie, Casablanca, Morocco.* Africa Ophthalmologica. 115:227-40, No. 4, April 1948.

Pentavalent arsenical drugs produced optic nerve afflictions due primarily to neurotropism. The impairment in most cases involved bilateral retrobulbar neuritis, cecitis, restriction of the visual fields, occasionally primary optic atrophy, etc. Trivalent arsenicals caused cecitis in some

patients, the effect being due to the small doses administered (reactivation of latent syphilis). Complete amaurosis (loss of vision) developed in 17 out of 20 grave cases.

Studies in Experimental Ocular Tuberculosis. X. The Effect of "Promin" and "Promizole" on Experimental Ocular Tuberculosis in the Immune-Allergic Rabbit. *Alan C. Woods, M.D. and Earl L. Burky, M.D., Baltimore.* Arch. Ophth. 39:471-490, April, 1948.

In 1940 Feldman, Hinshaw and Moses were the first to report on the action of "promin", a sulfonamide, on experimental tuberculosis in the guinea pig. Later they found that three such drugs, "promin," "promizole" and "diasone" were all deterrents to the progress of the disease. Clinical use of these drugs has been disappointing.

Our study was made on immune-allergic rabbits, where ocular tuberculosis runs a more restrained course than it does in normal rabbits, and is very similar to the usual clinical picture. It is a self-limited disease, lasting three to six months. The eyes were innoculated in the anterior chamber with human bacilli. "Promin" and "promizole" were given orally, and all eyes were examined weekly. After four months all animals were killed.

Results showed marked difference in the course of the disease in the treated and in the control groups of eyes. Both drugs used gave similar improvement in the course of the disease. Histologic studies corroborated gross findings and are reported here with photomicrographs.

Transmission experiments. Uveal tracts of three eyes of the above control group were ground up for innoculation into normal rabbits. All transfers produced typical disease progressing to ruptured eyeball by the twelfth week. The studies show the marked contrast between ocular tuberculosis in the normal and the immune rabbit.

Transfer to normal rabbits from eyes treated with "promin" produced tuberculosis in only one rabbit out of three. Three eyes of rabbits treated with "promizole" did not produce tuberculosis on transfer.

The results may be due either to a degradation or an attenuation of the virulence of the organisms allowing resistance of the host to become more effective, or to a direct bactericidal action on the bacilli. 16 references. 19 figures.

A Note on Intra-Vitreous Penicillin. *T. Stuart-Black Kelly, Manchester.* Brit. J. Ophth. 32:153-160, March 1948.

Nine cases are presented falling into four groups.

Prophylactic

Case 1. Large magnetic intra-vitreous foreign body removed through scleral wound of injury. One thousand units penicillin in 0.1 cc distilled water given via wound of entry. 50,000 units subconjunctival penicillin in adrenalin given twice. Final vision 6/9 J 1.

Case 2. Stone injury of cornea, ciliary body and sclera of 9 mm., iris incarcerated, lens gone; 100 units penicillin given as above. The eye improved without symptoms but was enucleated on the ninth day because of doubtful projection and possibility of sympathetic ophthalmia.

Case 3. Magnetic intra-vitreous foreign body via corneoscleral wound with iris and vitreous prolapse. Treatment consisted of 2000 units penicillin in 0.2 cc with 80,000 units subconjunctivally. The eye remained symptomless, but was enucleated because it was felt the damage too great for vision. No sign of infection or detachment was noted.

Post-Traumatic Infection

Case 4. Intra-vitreous magnetic foreign body with no penicillin after removal. In 24 hours a vitreous infection developed and failed to respond to 2000 units intra-vitreous penicillin and the eye was enucleated on the 15th postoperative day.

Case 5. Admitted with hypopyon, iritis and cloudy vitreous after magnetic foreign body entered globe. After removal 10,000 units penicillin in 0.2 cc produced control of infection. Twelve months later projection poor, secondary cataract, eye soft but no activity.

Case 6. Admitted with hypopyon ulcer; found to have intra-vitreous magnetic foreign body, lens undamaged. Magnetic removal of foreign body but no penicillin until five days later when 500 units intra-vitreous and 1,500 units subconjunctivally. The eye never completely cleared, despite 6/24 vision. Six weeks later hypopyon reappeared again at two months and again three months later. Four b.d. doses of 50,000 units subconjunctivally were given and evisceration was done because of danger of sympathetic ophthalmia.

Case 7. Admitted with vitreous haze and aqueous exudate of five days duration. Removal of magnetic foreign body and treatment with 1,000 units intra-vitreous was followed by enucleation in five days.

Postoperative Infection

Case 8. Infection following extracapsular cataract extraction beginning four days postoperative. Treatment with 50,000 units subconjunctivally and two days later with 1,500 units intra-vitreous and 90,000 units repeated subconjunctivally. Vision at one year was 2/60 with a decrease in field corresponding to injection site.

Panophthalmitis of Unknown Origin

Case 9. Spontaneous panophthalmitis in a 70 year controlled diabetic followed by enucleation. Six months later similar occurrence in remaining eye treated with 500 units with improvement in 48 hours and vision returned to him.

It is suggested penicillin in doses of 1,000-2,000 units may be used for intravitreous therapy for prophylaxis, to control post-traumatic and post-operative vitreous infection as well as infections of unknown origin or in uveitis. It may be used with vitreous graft. 12 references.—*R. T. Snip.*

An Attempt to Treat a Perforated Eye with Subjunctival Penicillin. *Frank R. Neubert, Guernsey.* British Journal of Ophthalmology, Vol. XXXII, P. 162-162, March 1948.

A 3 mm corneal perforation with no iris prolapse seen three hours after injury. The lens was covered by exudate but lens injury seemed probable. Two days later smear showed a Gram-positive penicillin-sensitive coccus. Subconjunctival injections of 50,000 units in adrenalin and 30,000 intramuscular were given. Four conjunctival injections were given. On the fifth day post trauma the eye was enucleated for uncontrolled panophthalmitis with lens and vitreous abscess verified by histological examination.—*R. T. Snip.*

29. Comparative Ophthalmology

Ocular Refractive Changes Accompanying High Blood Sugar in Alloxan-Treated Dogs. *Arthur Layton and J. M. D. Olmsted, University of California, Berkeley.* Proc. Soc. Exp. Biol. 68:257-59, June 1948.

To test the hypothesis that changes in ocular refraction accompany changes in blood sugar, 5 dogs were made diabetic and their state of refraction and blood sugars were followed. Two normal dogs were controls. Fasting blood sugars were determined by the Schaffer-Hartman-Somogyi macromethod. Refractive errors were determined by retinoscopy with the dogs under nembutal anesthesia and atropine cycloplegia. The dogs were made diabetic by intravenous injection of 10 per cent alloxan (50-100 mg. per Kg. body weight).

The refractive change was in the direction of hypermetropia, the change paralleled the course of the blood sugar, and astigmatic changes occurred. Definite refractive changes were seen in only 3 of the 5 dogs. There were no myopic changes in any animal.

To determine whether a change in the autonomic nervous system would affect the refractive change, a sterile operation was done in one dog in which the right superior sympathetic nerve was divided in the neck. After injecting alloxan in this dog, the refractive change in the right eye appeared two days later than in the left, but no other differences were found.

The significant observation is that hypermetropic changes may occur at the time of acute or increasing hyperglycemia. 7 references. 1 figure.

Vascular Morphogenesis in the Retina of the Cat. *I. C. Michaelson, University of Glasgow.* J. Anat., Lond. 82:167-74, July 1948.

The development of the blood vessels of the retina of the cat were studied in an attempt to explain the occurrence of a capillary-free zone round the retinal arteries. The evidence suggests that the method of formation of the capillaries themselves is an important factor in their final arrangement.

A 50 per cent solution of Indian ink was used as the injection mass and was introduced under pressure into the left ventricle or the common carotid artery.

Vessel growth in the cat retina is by a process of budding from pre-existing vessels; there is no vascular differentiation from local cells. Formation of retinal capillaries is primarily a function of the retinal veins. Only the arteriae afferentes appear to be derived from arteries. If the vein and artery are close together, growth occurs chiefly from the side of the vein away from the neighboring artery. The spread of capillary growth towards an artery extends only for a certain distance; it leaves a well defined, capillary-free space around the arteries similar to that found in the rat, dog, pig, and man.

The facts suggest that vascular development in the retina does not depend on a morphological specificity inherent in the vessels. The development depends on a factor or factors in the retina which can affect the budding of new vessels from the endothelium of veins. The growth factor is apparently not in the venous blood plasma and may be present in a gradient of concentration such that it differs in arterial and venous neighborhoods. The factor determining initiation of growth of capillaries probably determines the distance it shall extend in a given time.

The data show that the bulk of the capillary system in the retina of the cat may be considered as part of the venous system. The arterial system is supracapillary. 17 references. 19 figures.

30. Tropical Ophthalmology

See Contents for Related Articles

31. Hygiene, Prophylaxis, Occupational Ophthalmoloy and Injuries

A Cross-sectional View of Injuries in an Ophthalmic Practice in Eire. *Euphan Maxwell, Dublin.* Brit. J. Ophth. 32:134-153, March 1948.

Maxwell, of Dublin, has presented a highly interesting summary of his analysis of the 796 cases of ophthalmic injuries under treatment by his father and by himself at the Royal Victoria Eye and Ear Hospital.

The arrangement of his scheme of analysis is admirable. He considers the causes, dividing them into age; groups including birth injuries, as well as accidents befalling young children, such as carelessness with sharp instruments, by missiles and by falling. Older children and youths were hurt in sports and rough play and exercise. Explosives and firearms contributed a large number. Elderly persons, among whom were the presbyopes, injured, unprotected while at work. Older persons were injured gathering sticks, etc.

A special class was that of the "hooligans" who became troublesome after 1940. Penetrating wounds and contusions, as well as lacerations and burns, are listed. So, also, entrance and retention of foreign bodies in the globe. Seven cases of double perforation were noted. Cataract from both natural and traumatic causes were recorded, and injuries to the lids and the orbit. There was a distinct lessening of cases during the increased emigration from Ireland depending on political and social changes, and many reported that their poverty had caused them to endure hazardous occupations. Defective tools caused many an injury.

A large proportion of the traumatic cataracts required enucleation. In 25 cases of posterior foreign bodies, 16 required enucleation because of sepsis. There were cases of sympathetic ophthalmitis in 2% of the penetrations. Blindness from nerve damage followed injuries. Twenty-four cases of squint were recorded and a number of limitations of movement. Account was kept of those which gave rise to medico-legal charges.

The author gives credit to the benefits arising from improvement in surgical facilities, as well as to the development of new remedies in lessening the losses and reducing the length of the invalidism.

Bilateral Corneal Lesions Caused by Blast. *A. A. Douglas.* Proc. Roy. Soc. Med. 41:723, October 1948.

This case relates to the corneal changes which were found in the eyes of a man who was stunned by an explosion while at work in the factory. He was not seriously hurt bodily, but he complained of photophobia and dullness of sight. The next day each cornea was seen to be edematous, and the presence of a grayish central area from which lines radiated and branched. These lines were in deep folds and proved to be caused by folds in the Descemet Membrane, raised, as it seemed, on that surface, protruding into the aqueous. The whole cornea was thickened by infiltration. At the end of a month the areas had become somewhat clearer from a lessening of the thickness of the membrane. It became possible for the true state to be seen, emphasizing the folds in the posterior layers. Vision increased from less than 6/60 in each eye to 6/24 and 6/18. But, after a week or so it was lost in each again through the aqueous infiltrating the membrane.

Prevention of Ophthalmia Neonatorum: A Comparative Study. (*A Credé és Oláh-féle prophylaxis összehasonlitó értékelése.*) *B. Schilling, Dept. of Gynecology and Obst., St. Roch Hospital, Budapest.* Tudomanyos Közlemények. Scientific Papers, St. Roch Hospital, Budapest, 1948.

The author, in his practice of prophylaxis in obstetric cases, has found the classical Credé method much less efficient than his employment of solutions Albucid Sulfacetimide as a prophylactic. He is always careful to secure the flow of the solution throughout the extent of the conjunctival sac. 1 table.

Intraocular Foreign Bodies in Naval Personnel. *Hugo Lucic, San Diego, Cal.* California Med. 69:114-19, August, 1948.

Hugo Lucic has analyzed the histories of 68 cases of intraocular foreign bodies which had occurred among the navy personnel, both in combat and in the training classes within his assignment. Several interesting histories are given in detail. Besides insisting on the necessity that the previous history should be obtained, he demands that the first examination of the globe should be scrupulously carried out, as the wound of entrance can be obscure, and the presence of a body ascertained only by the roentgenon localizer. Search for particles of glass and non-magnetizable fragments should be made by other means than the magnetic. Hemorrhage might obscure and so might a rapidly forming cataract. It is of interest that small foreign bodies have been retained in the lens with opacification greater than when first noted.

While all retained foreign bodies are a menace to the health of an eye, inert substances might persist harmlessly for years. A reviewing of such patients ought to be conducted annually. Copper fragments, however, are always dangerous.

It should be borne in mind that sympathetic ophthalmitis can follow in any case of foreign body penetration.

Numerous references and figures are given.

Important Uses of Industrial Vision Tests and the Medical Director. *W. Gregory Morgan and N. Frank Stump, Owensboro Tube Works, General Electric Company.* Indust. Med. 17:253-58, July 1948.

Accurate and competent judgment of an employee's ocular powers is becoming more and more apppreciated in the various industries, both for the individual workman's ability to carry on, to protect him from injury, and to care for him when disabled, as well as to provide data for the consideration of compensation due when required.

The Medical Department of a plant should include an ophthalmologist to assist the Director. His equipment in most plants should provide a special "clinic" room where visual tests might be pursued quietly and without annoyance. The letter-charts, among which that of Snellen might be chosen, and appliances for the estimation of the muscular powers of the examinees might be carried on, as well as means to estimate both distance and accommodation ranges. The individual workman ought to be studied to ascertain his adaptability for the job to which he has been assigned, "the eye for the job."

The foremen and the Superintendents should stand in with the Ophthalmologist in order that the workmen might be protected from disability, and the works benefitted by the employment of efficient workmen.

Many instruments have been constructed to assist the examiner in his investigations, such as stereoscopes or the photometer, and the Bausch and Lomb Ortho-Rater.

Complete records of each man's case should be kept and available for consultation at any time. Such records can thus support any question covering compensation for claims for injuries or disability.

The author cites the results of certain cases in which the workmen who had passed the standards had earned greater wages than those who had failed to come up to the standards; also, the averages of absences were lower than for the faulty ones. 4 references, 2 tables, 3 figures.

Prevention of Blindness, *R. S. Agarwal, India.* Antiseptic. 45:398-401, June 1948.

Agarwal reviews the state of conditions in India relating to the eye and its powers, and the effects of modern education on the eyes in both the young and the old, male and female. Eyestrain, both refractive and muscular, is much complained of. In recent years efforts have been made to educate school children in exercising the eyes and to apply for correction of defects without delay once such becomes known.

Practical and scientific measures are being explained to teachers and cooperation encouraged with physicians who have been educated in modern Occidental schools. School teachers and district nurses are being instructed in ways to attend to eye affections and in simple yet helpful measures to combat blindness.

Management of Intraocular Foreign Bodies. *Ben. H. Hutchinson.* Texas State J. Med. 44:48-51, May 1948.

Hutchinson, of Texas, warns that it might be hazardous to allow a patient who has given a story of foreign body to go without careful search lest there be a retained body despite the apparent good health of that eye. Foreign bodies have been retained many years without the slightest annoyance. On the contrary, unexplained inflammation of an eye might be due to the presence of a foreign body—the history of an injury long since forgotten.

Accurate localization should be pursued both visually and reontgenographically. Early infection is likely to follow when the anterior segment has been penetrated.

The time for removal of the body should be gauged by conditions, immediate inflammatory reactions having to be considered. The position of the body and its effects on the tissue in which it is embedded should be taken into account. Anterior bodies, lying in the aqueous, can be removed after keratome incision.

This author has found it safe to delay efforts to extract the body from the lens. 18 references.

(This reviewer recalls a case of his own which had existed almost 30 years without discomfort; and, he has been astonished to find bodies embedded in globes which had been enucleated because of recent woundings, without the patient's recollection of previous injuries.)

(This reviewer has preserved among his collection, 4 lenses containing foreign bodies entered many years prior to his extraction of each whole lens. The wounds of entrance had been closed by the capsule sealed in each case; and the clouding of the lens continuing slowly for many years.—B.C.)

32. Illumination and Illuminating Engineering

Trends in Illumination Standards. *M. A. Tinker, University of Minnesota, Minneapolis, Minn.* Illuminating Engineering. 43:866-81, September 1948.

Analysis of the data upon which the current recommended practices of illumination are based in the author's opinion indicates many experimental procedures of questionable validity. Recommendations relating to color and distribution of light and brightness contrast are adequate, but the minimum intensities of illumination specified are too high. The author finds the following criteria of lighting used by Luckiesh and Moss not to be valid: preference for light intensity, visibility (visibility meter), nervous muscular tension, frequency of blinking, and decrease in heart rate; and cites other authorities in the field who substantiate his findings. Luckiesh and Moss recorded insufficient data to obtain significant results, using visual acuity and decrease in convergence reserve as criteria.

School lighting codes are adequate despite inferences from invalid data. The "Recommended Practice of Office Lighting" is satisfactory except for the statement, "higher values contribute greatly to accuracy, speed, and ease." Specifications for industry are based on surveys rather than experiments and the survey techniques employed are not adequately described. Illumination values recommended for homes are too high. They imply that poor illumination causes disability, "an unjust form of propaganda."

Tinker recommends the following:

Task	Critical Illumination		Adequate Illumination	
Reading legible print (10-11 point on good paper) by adults with normal eyes	3-4	ft-c	10-15	ft-c
Reading newsprint	7	"	15-20	"
Reading of handwriting	8-10	"	20-30	"
Setting 6-point type by hand	20-22	"	30-40	"
Threading a needle	30	"	40-50	"

These values hold for school children as well as adults.

Eyes with disabilities need somewhat more light for visual discrimination than normal eyes but not 100 footcandles or more. For low intensity values of illumination, increases of 5-10 footcandles are satisfactory for eyes with slight disabilities or corrections. For higher intensity values, increases yield no practical gain. 38 references.

The presentation of this paper was followed by considerable discussion: criticism by Messrs. Luckiesh, Darley and Allphin, and Tinker's answering remarks.

(*Note: The IES Recommended Practices referred to in this paper are those published prior to* 1945; *later office and school lighting reports have been issued.*)

The Measurement of Illumination and Brightness in a Classroom. *W. E. Folsom, Dallas Power and Light Co. and E. L. Biesele, Jr., Southern Methodist University, Dallas, Texas.* Illum. Eng., New York. 43:355-76, April 1948.

Complete patterns of illumination and brightness distribution in remodeled classrooms weer analyzed and compared with control rooms. A rapid and accurate technic was desirable but difficult to obtain under daylighting conditions. Serious variations in natural lighting occurred making it necessary to use photocell equipment in making measurements, a method being developed to correct errors. Illumination surveys at desk height and on the walls were made with a color-corrected cell to show illumination distribution under different lighting conditions. Results of these surveys were used with reflection factors of the surfaces to obtain brightness surveys of the rooms. These were supplemented and checked with brightness measurements made with the illumination measurements.

Results showed that specular reflections in the field of view can be seriously detrimental in the visual environment. It was also found that neither photocell nor visual balance instruments are entirely satisfactory for this work. The crude methods of measurement used made it uncertain just how to specify the qualities of satisfactory visual environment. Steps toward a more adequate specification of beneficial visual environment and better methods for its evaluation are necessary. 5 references. 1 table. 13 figures.

The Duration and Intensity of Sunshine. Part III. Daily Variations in Intensity. *Frank Benford, General Electric Research Laboratory, Schenectady, N. Y.* Illum. Eng., New York. 43:533-46, May 1948.

In accordance with the Cosine Law of Illumination, a complete illumination curve may be interpreted as the illumination on a wall for a certain part of twenty-four hours plus the illumination on a wall facing in the opposite direction for the rest of the twenty-four hours. The entire cosine

curve may be made real if an identical building is assumed to be so placed in the antipodes that its walls pass in a common plane through the earth's center. When the interference of the earth causes the illumination on one wall to disappear, it begins on the parallel wall in the antipodes. Illumination then is a smooth, continuous function of time through the entire year except for distortions caused by refraction. The method of specifying the proper cosine curve for a given test plane is outlined so that the user can fill in the curve and eventually identify its real and imaginary sections. Some interesting details of the illumination curves are discussed. 3 tables. 33 figures.

Color Characteristics of Human Complexions. *G. B. Buck II and H. C. Froelich, General Electric Co., Nela Park, Cleveland, Ohio.* Illum. Engin., New York. 43:27-49, January 1948.

Spectro-photometric curves were made of the facial skin of 103 subjects ranging from near-albino blondes to dark brunettes including Caucasian, Negroid and Asiatic races. Data obtained are represented by graphs showing the average curve for measurements throughout the year and various spectral reflectance curves. The complex shapes of the latter are apparently caused by a number of colorants in the skin, including carotene, melanin and melanoid. Individual spectral reflectance curves of human skin rarely cross, differences in complexion apparently resulting from a difference in reflection factor rather than chromacity. A special series of curves were made for women to show the effect of cosmetics.

Color preference studies were made of filament light and White Daylight and Soft White fluorescent Whites, data obtained being largely the basis for a new design 4500 White lamp. Over 1000 observors at Nela Park took part in these studies and under varying illumination, viewed typical colored materials and selected models whose complexions had been measured spectrally. The average curves and results of color preference studies indicated that most persons prefer a lamp of similar spectral characteristics to the material being illuminated. New white fluorescent lamps have now been designed for maximum rendering of color appearance of people, foods and typical interior decorations. 12 references. 2 tables. 23 figures.

Respective Flashing of Hot Cathode Fluorescent Lamps. *Fred J. Vorlander and Sigmund Stawicki, Champion Lamp Works, Lynn, Mass.* Illum. Engin., New York. 43:231-49, March 1948.

Hot cathode fluorescent lamps should not be used on flashing circuits because they are affected in the times started as well as the number of hours used. The rated life of 15 to 40-watt lamps is 2500 hours when operating periods average three hours per start. Lamp life is reduced by frequent starting because some of the electron emissive coating on the cathodes sputters off.

Performance of hot cathode lamps repeatedly flashed on conventional fluorescent circuits is unsatisfactory. Regular pre-heat hot cathode lamps can be satisfactorily flashed when their cathodes are continuously and properly heated and operated on 40-watt instant start ballasts. Burning hours of a 40-watt lamp flashed 10 or 12 times a minute are about 2500 hours or comparable to rated life on three hour operating cycles. The lumens per watt output under similar conditions is also about the same as similar lamps on a three-hour cycle average nonflashing circuit. Tests of the effect of flashing frequency on lamp life are being made. It is expected that it will be less at 40 flashes than at 12 flashes per minute. Advantages of a flashing fluorescent circuit are high lumen output, long light source and lamp life, less heat and more spectacular color effects when compared with flashing incandescent lamps. 5 tables.

An Analysis of Reflected Glare. *William G. Darley, Austin, Texas.* Illum. Engin., New York. 42:85-103, January 1948.

A generally known harmful effect of reflected glare is reduction in visibility of the task, requiring increased unproductive visual effort. Reflected glare results from brightness of the source, candlepower of the source area, and brightness or footcandles on the task. It is decreased if brightness of the source is reduced and brightness of the task maintained, if brightness of the source is kept constant and candlepower of the source area contributing to glare at any specific point is reduced or if brightness and candlepower of the source area are maintained and footcandles on the task increased.

Inspection of the average offices and schools shows the need of more care in the selection of materials, there usually being dark desk tops with low illumination levels and poor overhead light distribution. Reflection of light sources in a glass desk top causes a particularly vicious glare as it is practically unavoidable. The worst condition is when the task is not a plane surface so that there are different virtual images of the sources of glare for the two eyes, making satisfactory binocular fixation impossible on either the glare source or the object. Problems of imperfect binocular fixation however may be solved in the same manner as discussed for correcting decreased visibility caused by lowered brightness contrasts of reflected glare. 2 references. 13 figures.

The Heating Effect of Lighting Systems. *Domina Eberle Spencer, Brown University, Providence, R. I. and Priscilla Mayo, Tufts Medical College, Medford, Mass.* Illum. Eng., New York. 43:528-32, May 1948.

Heating by a lighting system may be general heating of the air in the room or direct heating of individuals by radiant power from the luminaires. The former is the same whether incandescent or fluorescent lamps are used while the latter may produce an unpleasant effect if the number of watts per unit area exceeds a critical value.

Experimental data on this critical number was obtained from a bank of fluorescent 3500 degree white lamps and another of daylight lamps. Each bank was placed vertically against a wall of a room and an observer walked towards it with eyes closed until the radiant heat from the lamps was felt. The instant luminous pharosage on the observer's forehead was then measured. Similar spot tests with incandescent lamps indicated that the just-perceptible heating effect depends upon the incident heating radiant pharosage. The just-perceptible luminous pharosage must be converted to just-perceptible radiant pharosage for comparison of the just-perceptible heating from different types of lamps.

Results of these tests confirmed previous results of Luckiesh and showed that the incident radiant pharosage on the principal surfaces should not be more than 50 watts per square meter if the heating effect of a lighting system is not to be objectionable. This is applicable to any lamp type to obtain the maximum illumination without undue heat. Not more than 113 lumen ft.^{2} should be used with a 300 watt incandescent light but a 3500 degree white flourescent lamp can be used up to 568 ft.^{2} 5 references. 4 tables.

Fluorescent Illumination for Teaching Laboratories Using Microscopes. *D. H. Hamley, University of Toronto, Toronto, Canada.* Illum. Engin., New York. 43:515-27, May 1948.

A preliminary survey of laboratory illumination showed that fluorescent lamps in standard industrial 2 lamp fixtures could be used. Position, flicker, wattage, brightness and effects of additional diffusion, illumination and color were then observed. Flicker is present but not usually noticed when 60 cycle fluorescent units are used. It was not noticeable in the microscope with 25 cycle units and 3500 degree K lamps operating 100 degrees out of phase with each other and barely noticeable with 4500 degree K lamps. It was marked with both however on the table surface beside the microscope. Flicker of 25 cycle units was much reduced and most satisfactory table illumination obtained by placing diffusion materials below the units but this also reduced effective brightness 50 per cent, making the light too low for high powers and dense materials. The 4500 degree K fluorescent lamps were found more satisfactory for examining polychrome stained material. Flicker was also decreased by using a sand-blasted diffuser plate below the tubes for low magnification work. Diffusion should not be used for general and high power microscopy, however, as it causes too much loss of intensity.

The minimum acceptable illumination value found was about 50 foot candles. This permitted easy use of the X10 mono-objective dissecting microscope. Illumination of 150 foot candles, however, raised the eye adaptation so much when the fluorescent lamp was used for the compound microscope, that any critical work was impossible.

This survey showed that, for satisfactory fluorescent illumination of laboratories, enough general illumination should be provided to give a 50 foot candle illumination level over the tables. Lamps should be centered

over the table, parallel with its length and at least 9 ft. above the floor so that the glare does not bother instructors. The most suitable ceiling sources found were 100 watt 5 foot lamps without diffusion. Special table outlets should be installed to provide the occasional bright light required for dense sections and dark field microscopy. 2 references. 5 tables. 3 figures.

33. Ophthalmic Sociology

See Contents for Related Articles

34. Education, History and Institutions

Postgraduate Education in Ophthalmology in the United States. *Everett L. Goar, Baylor University College of Medicine, Houston, Texas.* J.A.M.A. 138:1-3, Sept. 4, 1948.

It is estimated that about 1 ophthalmologist is needed for 15,000 persons or about 9,333 ophthalmologists for the entire United States. It is estimated that there are about 6,000 practicing ophthalmologists, 2,303 of whom hold certificates of the American Board of Ophthalmology and about 600 pending applications. Ophthalmoligical training is obtained from courses in the basic sciences relating to ophthalmology, by hospital residencies in ophthalmology, by work in ophthalmoligical outpatient clinics, and by practicing with an experienced ophthalmologist.

In 1947 there were 9 institutions with a total of 269 admissions giving these basic science courses. One of these is the Ophthalmological Study Council. Many other institutions give basic courses to their own residents. In the same year, there were 632 approved residencies in ophthalmology. Under the present system, not over 100 well trained ophthalmologists are produced annually. This is not because of the scarcity of candidates but of facilities. Solution of the problem depends upon whether or not the medical profession is willing to work on it because it is foolish to assume that there are only 8 medical schools in ths country capable of giving courses not limited to their own residents. 1 table.

American Ophthalmology During the Past Century. *F. H. Verhoeff, M.D., Boston.* Arch. Ophth. 39:451-464, April, 1948.

One hundred years ago ophthalmology was in a very primitive state as is evidenced by the treatment methods advocated in textbooks of that time. The paper summarizes the development of the speciality, remarks briefly on the early eminent ophthalmologists and their contributions to the specialty. Early organizations and publications of ophthalmologists are enumerated.

An Optometric Aptitude Test. *Neil D. Warren and A. A. Canfield (University of Southern California).* Educational and Psychological Measurement. 8 (2): 183-191, Summer, 1948.

A review of medical and engineering literature indicated that tests for training in medicine stressed verbal achievement of the applicant, and those in engineering stressed the mathematical achievement. Since optometry seems to combine studies related to both of these fields, it was considered logical to make some measurement of these two factors in the aptitude test for optometry. Furthermore, a "job analysis" was made on practicing optometrists in Los Angeles and the curriculum of an optometry school was examined carefully.

As a result of the above exploratory investigations a five-part test was constructed to determine the following characteristics: general level of scientific information; scientific interest and attitude; certain personality factors, such as attention to detail, accuracy of work, speed of work, etc.; amount of general information in fields other than science; mathematical ability; and, ability to do fine work which demands close attention and accurate perception.

The primary purpose of the aptitude test was to determine whether or not prospective students would be able to assimilate the courses presented in an optometry school. The test was not designed to select those applicants who would do well in the practice of optometry or who would demonstrate rigid professional ethics.

The five parts of the aptitude test consisted of: (1) Figure Checking; (2) Personal History; (3) Mathematics; (4) Verbal Reasoning and Vocabulary; (5) Graph Reading. The test was given to two classes consisting of 65 senior optometry students and 82 junior optometry students.

The authors concluded that the *Optometric Aptitude Test* demonstrates a validity on the two samples of optometry students "that is very near .60" and which is thought to represent a fairly strong correlation. A general science knowledge seemed to be most closely related to successful training compared to the other types of abilities sampled by this test. Personal history, interests, and attitude items, as applied in this test, did not have consistent validity in predicting school grades from sample to sample. The number checking tests and the ability to read graphs accurately and quickly, indicated validity for selecting optometry students and the ability to do mathematical problems involving reasoning was indicative of success in the study of optometry.

It is suggested that the *Optometric Aptitude Test* be used with other indices of student promise such as scholastic and social records, recommendations by competent and ethical optometrists, and personal interviews which reveal the students' attitude toward the profession.—*Robert E. Bannon.*

35. Miscellaneous

An Eye Speculum With Different Blades For Upper and Lower Lids. *B. S. Hylkema.* Brit. J. Ophth. 32:184-6, March 1948.

A new speculum is presented utilizing a different shaped metal blade for the upper and lower lids. The shapes of the blades are made to conform to the anatomical differences between the upper and lower lids. The speculum illustrated has detachable blades so that the same speculum can serve for either eye. 1 figure.—*R. T. Snip.*

Spectral Transmission of the Eye to Ultraviolet Radiations. *V. Everett Kinsey, Ph.D., Boston.* Arch. Ophth. 39:508-13, April 1948.

Quantitative measurements were made photoelectrically of the fraction of radiations transmitted through the ocular structures. Young adult albino rabbits were used.

Methods are described for preparing and testing each part of the eye used. Measurements were made with a Beckman spectrophotometer.

Results showed that ocular tissues in front of the retina absorb essentially all the radiations producing abiotic effects, *i.e.*, those of wave lengths shorter than 310 millimicrons, and that only a small proportion of the radiations in this region reach the anterior surface of the lens. It has been calculated that the eye would have to be exposed to three times the dose necessary to produce minimal damage to the cornea before minimal injury to the lens could be encountered. So little ultraviolet radiation in the abiotic range reaches the retina that damage from these rays would be extremely unlikely unless the sensitivity of the retina to ultraviolet radiation is much greater than that of other tissues. Experimental evidence in support of this conclusion also comes from the invesitgations of Verhoeff and Bell. 7 references. 2 tables. 2 figures.

Cotton Sutures in Ophthalmic Surgery. *John W. Henderson, M.D., Rochester, Minn.* Arch. Ophth. 39:515-8, April 1948.

Advantages of cotton thread in surgical knots include ease of tying, no tendency of the thread to fray or of the knot to slip, and smallness of the knot. Cotton is a relatively inert substance in contact with body tissue. The tissue reaction that is incited is a fibrolastic proliferation and a slight lymphocytic response. Healing occurs earlier than with silk or gut sutures.

Cotton was used in 50 eye operations, not including any cataract or muscle surgery. 2 references.

Occupational Therapy with Eye Patients: Separated Retinas. *Elizabeth S. Forbes, Massachusetts Eye and Ear Infirmary, Boston, Mass.* Am. J. Antiseptic, Madras. 45:461-4, July 1948.

Occupational therapy is especially necessary for cases with separated retinas because of their minimal three week stay in bed. It is necessary to keep the patient as busy and happy as possible by methods requiring little exertion and no sight. Activities which may be used as hobbies during the inactive period of several months after discharge from hospital are taught plus training in touch sense to aid the patient in becoming adjusted to temporary and perhaps permanent blindness.

The patient should usually be given a finished sample of the project he is to work and then given the equipment and materials for exploration. It is usually necessary to start work on the project for the patient and then carefully and simply explain what he is to do, taking care not to proceed too rapidly and to insure that each step is understood before taking up the next. A leather link belt is usually the first work and is followed by the Jersey looper potholder, then making a woolly yarn dog, and then knotting with 4 cords to make a curtain pull, dog leash or belt. Leather work probably has greatest appeal of all the crafts. Successful completion of even a single project does wonders for the patient's morale. 1 reference. 2 figures.

Eyesight Under Adverse Conditions. *R. S. Agarwall, Delhi, India.* Antiseptic, Madras. 45:461-4, July 1948.

Bright lights, dim lights, reading lying down, the movies, etc., have long been thought bad for the eyes but such is not the case. Darkness and not light harms the eyes. Daily exposure of the closed eyes to sun or strong electric light improves eye health and is beneficial to inflammatory conditions. There is a universal but unfounded fear of reading in a dim light. Reading in a dim light may even be beneficial provided there is sufficient light to see without discomfort. Sudden fluctuations of light cause discomfort to many but have been found beneficial to eyesight by the author. Fine print is actually beneficial and large print a menace to the eye because central fixation is usually lost in reading large print and fine print can only be read when the eyes are relaxed and there is good central fixation. Reading while lying down can only be done when the eyes are relaxed. Movies hurt the eyes because the individual strains to see them. Vision is actually benefited if this strain can be overcome. Keeping the upper lids down in the rest position and blinking frequently aids in this. Vision under difficult conditions is good mental training because, while the mind is at first disturbed by unfavorable environment, both mental control and eyesight are improved by becoming accustomed to them. 1 table.

(*Although there are many points in this article that would be difficult to prove, most ophthalmologists will agree that no organic harm to the eyes*

results from either too little or too much light under ordinary circumstances. Most of the so-called "eye strain" is the result of cerebral fatigue rather than any actual strain of the muscles.—E. B. D.)

Trifocal Glasses as an Aid to the Older Roentgenologist. *Ramsay Spillman, New York, N. Y.* Am. J. Roentgenol. 61:102, January 1949.

In the early fifties, presbyopia has normally increased to the stage where there is considerable difference between the correction for reading and for distance. This leaves an intermediate zone of partially impaired vision at the distance at which roentgenograms are normally read. Trifocal glasses successfully bridge this gap and give continuous vision if the individual can use them. They have been used by the author with excellent results, but they are not generally known.

The principle of these glasses is simple. A lens of uniform curvature is ground, the strength varying with the different refractive indices of the 3 kinds of glass involved. The intermediate rectangle is half the strength of the lower addition. The proper inclination of the head to give vision through the necessary correction soon becomes a reflex without conscious effort even though a complicated optical prescription involving spheres, cylinders and prisms is used. 1 figure.

Trends in Ocular Surgery. *William B. Clark, Tulane University of Louisiana School of Medicine, New Orleans, La.* M. Rec. & Ann. 42:596-604, September 1948.

More refined diagnostic methods are resulting in much less ophthalmic surgery than a generation ago. Chemotherapy and antibiotics are making some ophthalmic surgery unnecessary. Trachoma, acute dacryocystitis, ulcerative blepharitis, corneal ulcers, and gonorrheal ophthalmia are some of the eye diseases now being improved or controlled by these agents. Certain diseases as epidemic keratoconjunctivitis and toxoplasmosis do not respond to them, however. Lysozyma is hard to obtain but is now being successfully used in trachoma, keratitis, and various infected lesions. Beta rays are especially useful in nonmalignant lesions of the lids and anterior ocular segment such as punctate keratosis, corneal ulcers and scars.

New special technical methods are the use of gold micropins in retinal detachments, the chemical reaction being more severe than with platinum pins and causing denser adhesions between the retina and choroid. Better scleral fixation is being emphasized and cataract surgery simplified by corneoscleral and other appropriate sutures. No. 0000 or 00000 plain catgut sutures have been found especially useful in extraocular muscle surgery. Air injection is valuable in many ways, chiefly to mechanically separate tissues, and in the management of intraocular foreign bodies. Keratoplasty and keratectomy have become most successful. The eye bank is bringing together recipients and donors and minimizing time lost between removal of the eye and its corneal implantation. 16 references.

Device for Exercising Ocular Muscles. *Merle E. Floegel, Takoma Park, Md.* Off. Gazette, U. S. Patent Off. 612: No. 3,702, July 20, 1948. Patent No. 2,445,519.

This device consists of a frame with a fixation object housing so mounted thereon that it will slide in 2 directions, and having a fixation object mounted upon it. An electric circuit controlled by a spring switch is provided for electrically illuminating the fixation object. A handle is pivotably attached to the housing to aid in sliding it back and forth and for simultaneously operating the switch so that the fixation object will be illuminated when travelling in one direction but not in the other. 1 figure.

An Implant with Bridges for Attachment of Muscles. *Emmanuel Rosen, Newark, New Jersey.* Brit. J. Ophth. 32:166-70, March 1948

A new implant is presented consisting of a plastic truncated cone with a convex base. It is 18-24 mm. long and 16-18 mm. in diameter at the convex base. Six bridges situated anatomically are upon the anterior convex surface to receive the extraocular muscles sutured back on themselves. A later model has metallic bridges to follow any shift by x-ray.

Five case reports are included observed over a six month period. All seem to maintain good movement and no infections are reported. 4 references. 2 figures.—*R. T. Snip.*

(*Six months is too short a period to evaluate the permanent qualities of any implant.*—E. B. D.)

36. Book Reviews

Pathologic Changes of the Fundus Oculi in the Diseases of the Retina (Atlas of Ophthalmoscopy, Vol. I) (*Les aspects pathologiques du fond de l'oeil dans les maladies de la rétine.*) *G. Renard, Faculté de Médecine de Paris, France.* Report prepared for Societé Francaise d'Ophthalmologie, May 1946. Masson Edit., Paris, 1946. 170 pp., 32 colored plates, 260 references.

The book represents the second report of a series on ophthalmoscopy published under the auspices of the Societé Francaise d'Ophthalmologie. It offers the customary excellent presentation of the other publications of the Society. Case reports of "Contusions of the Retina" cover most of the fundus lesions found. Under "Retinal Folds" three groups of lesions are studied.

A clinical grouping of anatomical lesions, representing dysembryoplasia at different stages, is offered. A potential of the spread is greater as the genetic malformation occurred early. Renard's classification

appears very comprehensive, extending from the simple isolated congenital anomalies to the more complicated retinal phacomatoses which, in turn, are subdivided into tuberous sclerosis and angiomatosis of the retina.

The study of the "Familial Maculo-cerebral Degenerations" includes lesions having a single etiology, the degenerations being considered as the result of hereditary and familial processes, probably different but affecting at the same time the central nervous system and its embryological appendage, the eye. Opposed to this group, another class is studied. It is characterized by a limited and symmetrical lesion of the macula, causing a loss in visual acuity, with central scotoma, more or less severe, the absence of progression after a certain time and the absence of central nervous changes.

The "Tapeto-retinal Degenerations" (rétinal abiotrophies), having a familial character, are studied together and divided into benign and progressive forms. Retinitis pigmentosa is presented as a diencephalo retinal lesion and not as a simple retinal disease.

In the "Senile Macular Degeneration of Danis and Coppez" (Junius and Kuhnt), it is suggested that in this condition the elastic as well as the collagenous fibers are affected. Yellow spots appear, followed by edema, exudates and hemorrhages. Later the macula is yellow, elevated with irregular, hemorrhagic edges. Cincinate retinitis is thought to be due to small foci of softening of the retina.

The "Occlusion of the Central Artery of the Retina" may be caused by embolism in some specific cases; in others thromboses form in situ where a patch of atheroma is present. It seems that the larger group of occlusions is due to spasms alone. In "Recurrent Vitreous Hemorrhages," first, there is an inflammation of the venous walls on which a moniliform veil appears. Later, new-formed blood vessels by-pass the area which has become thrombosed; these fragile blood vessels are responsible for the recurrence of the hemorrhages. In the study of the "Thromboses of the Central Vein of the Retina," it is remarked that the occurrence is high in influenza, sinus disease or prostatic infection, pointing thereby to the assumption that mild alterations of the endovein may be responsible for the thrombosis.

Retinal Changes in Relation to Systematic Diseases (Atlas of Ophthalmoscopy, Vol. II). (*Altérations de la rétina en rapport avec les affections générales.*) *P. Bonnet, Université de Lyon, France.* Report prepared for Société Francaise d'Ophthalmologie, May 1947. Masson Edit., Paris, 1947. 253 pp., 36 colored plates, 47 black and white illustrations.

This publication is the third volume of a series on ophthalmoscopy published under the sponsorship of the Société Francaise d'Ophtalmologie. The author, his own illustrator, presents colored plates showing the successive

stages in the evolution of numerous retinal lesions in relation to systemic diseases. A large portion of the book is devoted to blood dyscrasias and diabetes, the observations reported being particularly meticulous.

The retinal changes studied are classified as follows:

(1) Under the heading of cyanosis of the retina are grouped various diseases having as a common finding the increase in the number of circulating erythrocytes.

(2) Retinal changes in intracranial aneurysms closely resemble those found in cyanosis of the retina, with dissiminated hemorrhages throughout the fundus.

(3) The retinopathies of leukemia are extensively studied. The appearance of the fundus is said to be of great importance in establishing the prognosis and evaluating the results from the treatment. All cases of leukemia, more particularly of myelogenous leukemia, should be studied ophthalmoscopically, as the retinal changes reflect the clinical progress of the disease.

(4) In anemia, retinal changes are less specific than in the leukemias. The form in which retinal lesions are most frequently noted is pernicious anemia (Biermer's anemia). However, even in this type the hemorrhages are present only in 50 per cent of the cases.

(5) Under the heading of hemorrhagic diathesis, cases of hemophilia and secondary purpuras are reviewed. The most frequent fundus lesion reported is a preretinal macular hemorrhage, almost always bilateral.

(6) The retinal changes in infectious diseases have not attracted the attention of ophthalmologists as they should have. Infectious or septic retinitis may be found as the only clinical manifestation of a latent septicemia. Such retinal lesions are not the least serious. Infectious lesions of metastatic origin were believed limited to the uveal tract. It has been established, however, that the retina itself may be the site of bacterial emboli.

(7) Retinal changes in certain forms of diabetes are shown. A particular type of diabetic retinitis, which occurred in a 14 year old girl, is reported. The edematous retina is covered nasally with a fine veil of proliferative retinitis. Segments of the vessels appear as though coated with frost and between these the blood column is clearly outlined. A comprehensive exposè of the association of diabetes and systematic hypertension is made. The characteristic features of this form are: (a) the presence of newformed capillaries, grouped like a bunch of mistletoe; (b) venous dilatations and ectasias; (c) loops and knots formed by the veins; (d) the coating of sections of the veins by brilliant needle-like crystals, giving the appearance of sugar-coating.

In this outstanding study, certain important headings have been omitted such as, parasitic infestations, focal infections, cardiovascular diseases (especially hypertension and arteriosclerosis). The book is nevertheless unexcelled by the painstaking reporting of details in the text as well as in the illustrations.

The Management of Binocular Imbalance. *Emanuel Krimsky, M.D.* 464 pp. 200 illustrations; $12.50; Lea and Febiger, Philadelphia, Pa., November 1948.

The author states in his preface that he attempts to clarify ten problems for the practitioner:

1. The meaning of binocular cooperation in all visual or accommodative ranges as well as for selective directions of gaze.
2. The examination of binocular status in an objective purposeful manner.
3. When to interpret binocular coordination as normal or flexible, and when it should indicate binocular eyestrain.
4. How binocular imbalance can affect visual function in one or both eyes.
5. The significance of symptomless as well as symptomatic binocular imbalance.
6. How to treat binocular imbalance when the eyes appear straight.
7. When cross-eye is apparent, how we should evaluate it from the standpoint of the need of possible medical or surgical therapy.
8. When prisms should be prescribed.
9. When we should resort to medical or to surgical treatment.
10. The merits of binocular training.

One of the most outstanding chapters of the book is on the Corneal Light Reflex which the author points out is so important in the examination of young children, especially when they are uncooperative. There are also excellent chapters on Ocular Fixation, Positions of Gaze, and on the Ocular Movements as well as on the normal and abnormal Physiology of the Extraocular Muscles. He devotes one chapter to the phoria responses in which he not only considers the position of rest of the eyes and the terminology of phoria but also discusses various types of heterophoria encountered. We were particularly impressed by this chapter which should be read by everyone interested in the study of motor anomalies. There are excellent chapters on the Maddox Rod and on normal and abnormal Binocular Image Responses.

In Chapter X there is an excellent review on binocular examination with many of the author's ideas and methods of examination. The chapters on Neurological Considerations and Squint Problems in Children are unusually valuable as is the chapter on Prisms in the Treatment of Binocular Imbalance. The chapter on the Stereoscope is quite complete, and in this chapter there is published under the auspices of the Societe Francaise d'Ophthalmologie.

an excellent review of binocular training methods. The last chapter is devoted to Surgical Management of Binocular Imbalance but the author obviously did not intend to make this a complete review of the subject.

The volume is well illustrated and most of the titles are clear and sufficiently explanatory. The references are on the whole from writings of authors in this country and there is a good author and subject index. It is the reviewers' opinion that the author has done an excellent piece of work in carrying out the aims stated in the preface. The book is recommended to those interested in this important and difficult subject.—*Conrad Berens, M.D., Louis J. Girard, M.D.*

Principles and Practices of Ophthalmic Surgery. *Edmund B. Spaeth, M.D.* 4th edition, 1044 pp. 649 illustrations containing 1251 figures, 8 colored plates, Lea and Febiger, Philadelphia, Pa., October 1948.

The revised fourth edition of Spaeth's Principles and Practice of Ophthalmic Surgery is an excellent contribution to the literature of ophthalmology. This volume contains additional material brought to date with many new technics quoted verbatim from several outstanding authorities.

The detailed extensive chapter on plastic surgery is outstanding in its thoroughness and clarity and is invaluable in the work of rehabilitation of the many injuries resulting from World War II. Traumatism, grafts and the surgical correction of ptosis are discussed most comprehensively.

A new section covering plastic implants, enucleation, evisceration and exenteration has been included in this edition.

The discussion of the physiology of squint, which is extremely important in making an accurate diagnosis, enlightens some of the most important problems in the non-surgical and surgical correction of strabismus.

Dr. Spaeth has made a thorough review of current ophthalmic literature and has added worthwhile material to each chapter of his new publication.

Surgical technics are well and clearly illustrated and are a definite improvement over previous editions. The general index and authors' index seem to be sufficiently complete.

This book is enthusiastically recommended to anyone who desires an up to date authoritative review of ophthalmic surgery. Doctor Spaeth deserves a great deal of credit for giving ophthalmology such a splendid source of invaluable information.—*Conrad Berens, M.D., Louis J. Girard, M.D.*

Clinical Refraction. *Irvin M. Borish*, The Professional Press Inc., 5 N. Wabash Ave., Chicago 2, Ill.; 431 pp., 111 Illustrations, 1949, $7.50.

While this text assumes that the reader has had some preliminary background in physiological and goemetric optics, it includes those theo-

retical aspects which are pertinent to the topics covered. Essentially, as the title implies, this book is intended for students and the practitioners interested in the practical phrases of refraction and allied matters.

Except for formulae and computations which are necessary and of clinical value, the mathematical treatment is minimized. The style is clear and lucid, with unbiased treatment of controversial subjects. Of particular importance is the excellent up-to-date references following each chapter. So many texts are simply a restatement of what has been written many years ago and contain references which are out of date and unavailable that it is a welcome experience to have a book which, while it does not ignore the basic accomplishments of the authorities of the past, nevertheless presents the most recent authoritative researches which are related to the clinical aspects of refraction. Furthermore, the material presented and the references cited are not one-sided; they represent the best in the fields of ophthalmology, psychology, education and optometry.

Section I (Chapters I-VII) is concerned with the refractive status of the eye: hyperopia, myopia and astigmatism; accommodation and presbyopia; versions, accommodation and convergence; anisometropia and aniseikonia. Definition of terms is comprehensive and concise. The developmental and etiological factors, including biological distribution of ametropia are discuussed. Of special interest is the unprejudiced exposition of the various theories on the cause, progression, and treatment of myopia. The treatment of the subject matter in the chapter on anisometropia and aniseikonia succeeds in presenting the salient points on these important anomalies in an easily understood manner.

In Section II (Chapters VIII-XII), the preliminary examinations consisting of history and symptoms, visual acuity, external inspection, ophthalmoscopy, and field charting are discussed intelligently, with many practical suggestions gathered from competent authorities. The chapter on visual acuity is most interesting and instructive. The effect of blur circles, size of pupils, intensity of illumination, age and sex, color, contrast and time, as well as the various commonly used tests for determining visual acuity, clinical considerations and the inclusion of charts for equivalent expressions of visual acuity represent the compilation of a wealth of important information difficult to find in any other single text. The chapters on external and ophthalmoscopic examinations and on field charting constitute well written condensations of current techniques. Candid appraisals of the clinical value of various methods are given with sound reasons.

The subject of Refraction is well covered in Section III, with Chapters XIII-XVII devoted to ophthalmometry, retinoscopy, subjective testing, phorometry and dynamic skiametry. The development and basic optical principles of ophthalmometry and retinoscopy are treated briefly and adequately. The technique and the clinical value of these objective tests are explained clearly. Step-by-step procedure is given for the techniques of

fogging, the use of astigmatic charts, cross cylinder test, the pinhole disc, stenopaic slit, Scheiner's Disc, the Cobalt Disc, etc. Tests for binocular coordination, accommodation-convergence, relationships, fusional and accommodative amplitudes are discussed in the chapter on Phorometry. Also, in this chapter is an excellent evaluation of the assumptions and the clinical significance of the Dynamic Cross Cylinder Test. The chapter on Dynamic Skiametry includes the investigations of Cross, Sheard, Tait, Fry, Pascal and other authorities. It summarizes the various techniques and indicates that recent investigations have revealed very little statistical correlation of many of the assumptions made.

Analysis and Prescription is the material presented in Section IV and is divided into four chapters, including sources of discomfort, single vision lenses, absorption lenses, bifocals and multifocals. An important contribution is a review of the work of Donders, Landolt, Percival, Sheard, Neumueller, Fry and Hofstetter in recording graphically the limits of clear binocular vision, or what is known as the "Zone of Comfort". These important matters which are the basis of much of the judgment used in prescribing have been neglected in almost all other recent textbooks on refraction. The chapters on lenses alone would make this book well worth the purchase price. Included are the advantages and disadvantages of various forms of single vision and bifocal lenses with which everyone interested in refraction should be familiar. The prismatic effects of anisometropic correction and their treatment is well covered. Also, the types and application of absorption lenses is treated comprehensively.

The final section on Monocularity includes chapters on the development and classification of strabismus; strabismometry and other tests; paralytic strabismus; prognosis and treatment. The work of outstanding authorities in ophthalmology and optometry is reviewed and their techniques are compared and appraised with sound clinical judgment.

The five sections of this book cover material that could not be found as well and as authoritatively presented in five or more volumes, each of much greater length than this single text. The author is to be commended for the years of work which must have been put into this arduous task and he is to be congratulated for bringing together so succinctly, in only 431 pages, the voluminous material that is germane to clinical refraction.

Robert E. Bannon

Fundamentals of Practical Optometry. *Harold R. Barnes (Columbia University)*, Sargeant Book Co., 343 Burncoat St., Worcester, Mass., 5th edition, 1948, 211 pp., $6.50.

As stated in the preface, this book was written for students; nevertheless, it should serve also as an excellent review and sourse of information for the practitioner. It is a practical book describing in non-academic, conver-

sational-style language the various techniques used in refraction. It purposely avoids the theoretical aspects of retinoscopy, ophthalmoscopy, ophthalmometry, and subjective testing, but it succeeds in describing clearly the step-by-step procedure of making these essential tests.

Considerable space is well given to the methods of ophthalmoscopy and retinoscopy on that willing subject, the schematic eye. Repeated practice is urged for the attainment of proficiency in retinoscopy and ophthalmoscopy. The author describes a schematic eye kit which he devised and which includes lenses and plates simulating the elementary features of special conditions such as conical cornea, lenticular and fundus changes.

Chapter I covers an introduction to and the definitions of the fundamental terms associated with refraction by retinoscopy.

Chapters II and III are concerned with experiments on the apparent motion of fundus reflexes and the elementary instructions of how to hold and rotate the retinoscope. The determination of spherical ametropia by retinoscopy is elucidated clearly and completely.

The determination of the amount and axis of astigmatism by means of retinoscopy and the schematic eye is covered in Chapter IV.

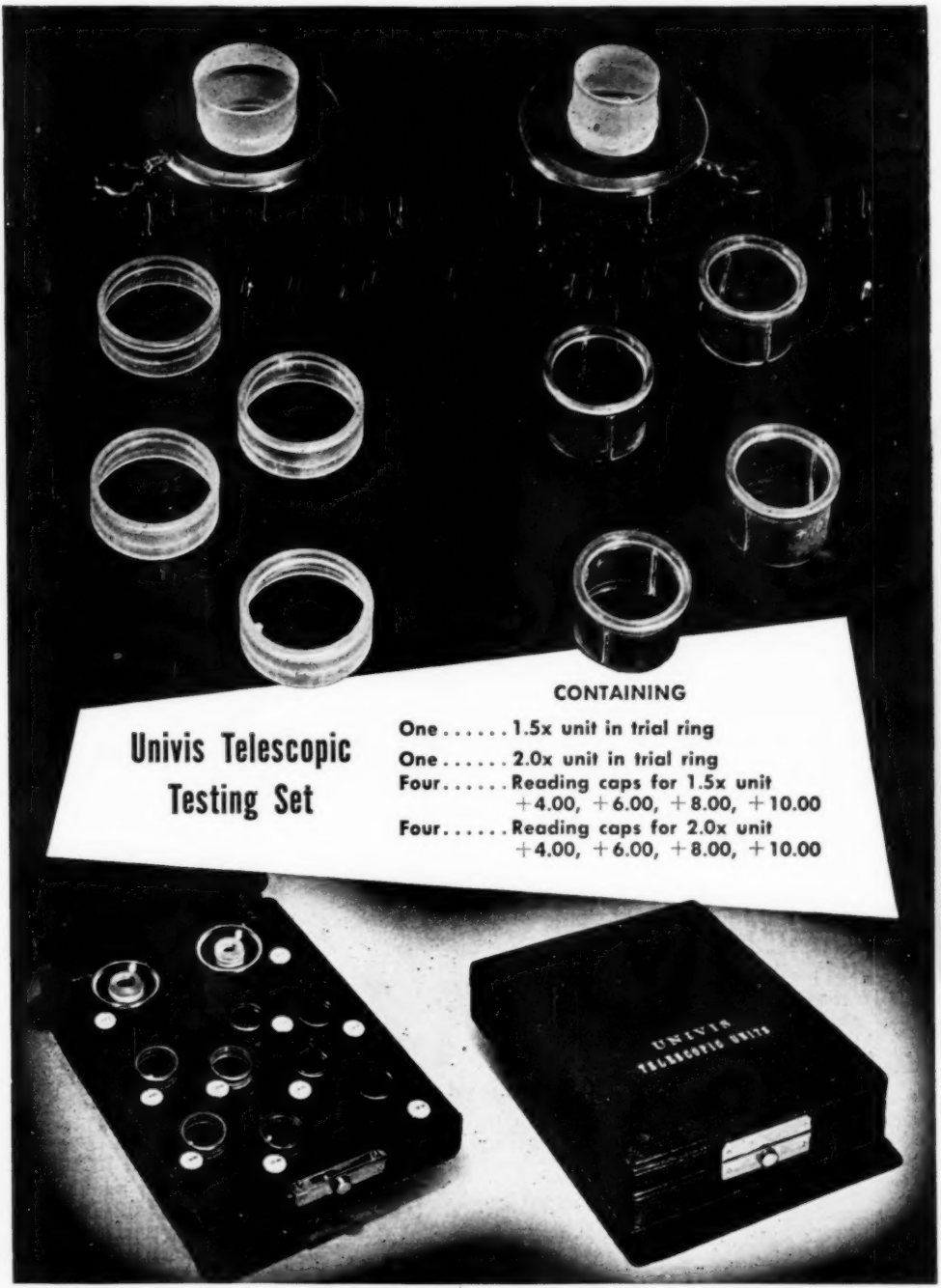
The technique of static retinoscopy on the human eye is described in Chapter V. Special consideration is given to the control of accommodation, and also, to unusual conditions such as irregular astigmatism, scissor movement, conical cornea, keratoconus, etc.

Chapters VI, VII, VIII, and IX are devoted to dynamic retinoscopy, including the modified Cross method, Sheard's method and Taft's method. The significance of high and/or low adds to reversal, lag of accommodation, dynamic aberration, etc., are discussed intelligently.

Chapters X, XI and XII describe techniques of refraction by subjective methods. The proper fog for controlling the accommodation is stressed and detailed instructions are given in the use of astigmatic charts, and cross cylinder tests; the determination of phorias by means of the Maddox Rod and dissociating prisms; the measurement of the amplitude of accommodation and the recording of the visual acuity for distance and near fixations, monocularly and binocularly.

Ophthalmometry is the subject matter contained in Chapter XIII and various models (Genothalmic, Keratometer, Micromatic) are described. The technique of determining the corneal curvatures, the recording of the data, and the various rules of allowances are presented clearly and succinctly.

The inclusion of Chapter XIV on case history and symptomatology implies that the most accurate determination of a patient's ametropia and heterophoria is not adequate information for purposes of treatment. Careful consideration of the chief complaint and general symptoms, past and present, are essential in the final disposition of every case. Several suggestions are given as an aid in history taking and pertinent details suggesting pathological conditions are described.



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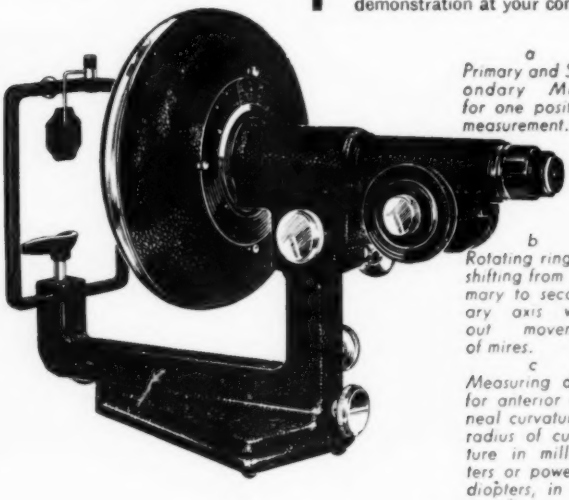

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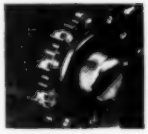

d
Automatic recording drum—corneal astigmatism in diopters.

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